



# STIC Search Report

## EIC 1700

STIC Database Tracking Number: 152995

TO: Sin J Lee  
Location: REM 9D60  
Art Unit : 1752  
May 12, 2005

Case Serial Number: 10/728801

From: Usha Shrestha  
Location: EIC 1700  
REMSSEN 4B28  
Phone: 571/272-3519  
[usha.shrestha@uspto.gov](mailto:usha.shrestha@uspto.gov)

### Search Notes

I have conducted a structure search for both of your search request together regarding the Case Number 10/728,801. I have made two different search report one with si linking to oxygen and one without oxygen. Thanks.



# STIC Search Results Feedback Form

**EIC17000**

Questions about the scope or the results of the search? Contact *the EIC searcher* or contact:

Kathleen Fuller, EIC 1700 Team Leader  
571/272-2505 REMSEN 4B28

## Voluntary Results Feedback Form

- I am an examiner in Workgroup:  Example: 1713
- Relevant prior art **found**, search results used as follows:

- ☐ 102 rejection
- ☐ 103 rejection
- ☐ Cited as being of interest.
- ☐ Helped examiner better understand the invention.
- ☐ Helped examiner better understand the state of the art in their technology.

Types of relevant prior art found:

- ☐ Foreign Patent(s)
- ☐ Non-Patent Literature  
(journal articles, conference proceedings, new product announcements etc.)

➤ Relevant prior art **not found**:

- ☐ Results verified the lack of relevant prior art (helped determine patentability).
- ☐ Results were not useful in determining patentability or understanding the invention.

Comments:

Priority #3

Access DB#

152095

## SEARCH REQUEST FORM

### Scientific and Technical Information Center

Requester's Full Name: Sin J. Lee Examiner #: 76060 Date: 5-10-05  
Art Unit: 11752 Phone Number 302-1333 Serial Number: 101728, 801  
Mail Box and Bldg/Room Location: 9D68 (Rem) Results Format Preferred (circle): PAPER DISK E-MAIL

**If more than one search is submitted, please prioritize searches in order of need.**

\*\*\*\*\*

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Bib attached

Inventors (please provide full names): \_\_\_\_\_

Earliest Priority Filing Date: \_\_\_\_\_

*\*For Sequence Searches Only\* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.*

SCIENTIFIC REFERENCE BR  
Sci & Tech Inf. Ctr  
MAY 10 2005  
Pat. & T.M. Office

Please search for the polysilazane  
as shown ~~in~~ in cl. #1

Searcher: <u>uska</u>	NA Sequence (#) _____	STN <u>232 264.75</u>
Searcher Phone #: _____	AA Sequence (#) _____	Dialog _____
Searcher Location: _____	Structure (#) <u>1</u>	Questel/Orbit _____
Date Searcher Picked Up: <u>5/12/05</u>	Bibliographic _____	Dr.Link _____
Date Completed: <u>5/12/05</u>	Litigation _____	Lexis/Nexis _____
Searcher Prep & Review Time: <u>40</u>	Fulltext _____	Sequence Systems _____
Clerical Prep Time: <u>30</u>	Patent Family _____	WWW/Internet _____
Online Time: <u>120</u>	Other _____	Other (specify) _____

Serial No. 10/728,801  
 Filed: December 8, 2003

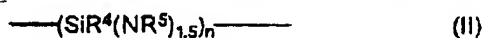
### Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (original) A photosensitive polysilazane composition comprising a polysilazane or its modification product and a photoacid generator, wherein said polysilazane or its modification product is

~~a polysiloxazane having a number-average molecular weight of between 300 to 100,000 that contains, as its main repeating unit,  $-(\text{RSi}(\text{NR}^6)_{1.5})-$ ,  $-(\text{RSi}(\text{NR}^6)\text{O}_{0.5})-$ ,  $-(\text{RSi}(\text{NR}^6)_{0.5}\text{O})-$ ,  $-(\text{RSiO}_{1.5})-$  or  $-(\text{SiO}_2)-$ , wherein R and R<sup>6</sup> respectively and independently represent a hydrogen atom, an alkyl group, an alkenyl group, a cycloalkyl group, an aryl group, and alkylamino group or an alkylsilyl group, or~~

a polysilazane having a number-average molecular weight of between 100 to 100,000, that mainly contains the skeleton represented with the following general formula (II),



wherein R<sup>4</sup> and R<sup>5</sup> respectively and independently represent a hydrogen atom, an alkyl group, an alkenyl group, a cycloalkyl group, an aryl group, a group other than these groups in which the portion bonded directly to the silicon or nitrogen is carbon, an alkylsilyl group, alkylamino group or an alkoxy group, and n is an arbitrary integer, and wherein

said photoacid generator is at least one type of compound selected from the group consisting of a peroxide and a nitrobenzyl ester.

2. (original) The photosensitive polysilazane composition according to claim 1 wherein said polysilazane is a polysilazane having a number average molecular weight of 100 to 100,000 that mainly contains the skeleton represented by general formula (II).



## UNITED STATES PATENT AND TRADEMARK OFFICE

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## \*BIBDATASHEET\*

Bib Data Sheet

CONFIRMATION NO. 8923

SERIAL NUMBER 10/728,801	FILING DATE 12/08/2003  RULE	CLASS 430	GROUP ART UNIT 1752	ATTORNEY DOCKET NO. FN4104US-CIP
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APPLICANTS

Tatsuro Nagahara, Kakegawa-shi, JAPAN;  
Hideki Matsuo, Kakegawa-shi, JAPAN;  
Tomoko Aoki, Kakegawa-shi, JAPAN; Kazuhiro Yamada, Tochigi-ken, JAPAN;

\*\* CONTINUING DATA \*\*\*\*\*

This application is a CIP of 09/806,852 06/18/2001 ABN \* SJL  
(\*)Data provided by applicant is not consistent with PTO records.

\*\* FOREIGN APPLICATIONS \*\*\*\*\*

JAPAN 10-282697 10/05/1998 SJL  
JAPAN PCT/JP99/05498 10/05/1999

IF REQUIRED, FOREIGN FILING LICENSE GRANTED  
\*\* 01/16/2004

Foreign Priority claimed <input checked="" type="checkbox"/> yes <input type="checkbox"/> no	STATE OR COUNTRY JAPAN	SHEETS DRAWING 3	TOTAL CLAIMS 19	INDEPENDENT CLAIMS 2
35 USC 119 (a-d) conditions met <input type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> Met after Allowance	Verified and Acknowledged	Examiner's Signature	Initials	

ADDRESS

Alan P. Kass  
Clariant Corporation  
70 Meister Avenue  
Somerville, NJ  
08876

TITLE

Photosensitive polysilazane composition and method of forming patterned polysilazane film

<input type="checkbox"/> All Fees
<input type="checkbox"/> 1.16 Fees ( Filing )

=> fil reg

FILE 'REGISTRY' ENTERED AT 13:39:50 ON 12 MAY 2005  
 USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.  
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=> d his

FILE 'HCAPLUS' ENTERED AT 10:12:48 ON 12 MAY 2005  
 L1 2 S US20040081912/PN  
 SEL RN

FILE 'REGISTRY' ENTERED AT 10:14:00 ON 12 MAY 2005  
 L2 14 S E1-E14

FILE 'LREGISTRY' ENTERED AT 12:12:49 ON 12 MAY 2005  
 L3 STR

FILE 'REGISTRY' ENTERED AT 12:15:41 ON 12 MAY 2005  
 L4 50 S L3  
 L5 SCR 2043  
 L6 50 S L3 AND L5  
 L7 2048 S L3 AND L5 FUL  
 SAV L7 LEE801/A  
 L8 STR L3  
 L9 13 S L8 SAM SUB=L7  
 L10 277 S L8 FUL SUB=L7  
 L11 5 S L7 AND L2

FILE 'HCAPLUS' ENTERED AT 12:50:39 ON 12 MAY 2005  
 L12 147 S L10  
 L13 1273 S L7  
 L14 149 S L13(L)?RESIST?  
 L15 25 S L14 AND PHOTO?/SC,SX  
 L16 29 S L12(L)?RESIST?  
 L17 6 S L16 AND PHOTO?/SC,SX

FILE 'REGISTRY' ENTERED AT 13:08:47 ON 12 MAY 2005  
 L18 1771 S L7 NOT L10

FILE 'HCAPLUS' ENTERED AT 13:09:23 ON 12 MAY 2005  
 L19 1164 S L18  
 L20 129 S L19(L)?RESIST?  
 L21 22 S L20 AND PHOTO?/SC,SX  
 L22 25 S L17 OR L15  
 L23 49 S L12 AND ?RESIST?  
 L24 9 S L23 AND PHOTO?/SC,SX  
 L25 19 S L21 NOT L24  
 L26 94 S L19 AND PHOTO?  
 L27 6 S L26 AND ACID(A)GENERAT?  
 L28 5 S L27 NOT L25

FILE 'REGISTRY' ENTERED AT 13:39:50 ON 12 MAY 2005

=> d que l19

L3 STR

G1~Si~N~G1	Ak~N	Ak~Si	O~Ak
3 1 2 4	@5 @6	@7 @8	@9 @10

VAR G1=H/AK/CB/5/6/7/8/9/10  
 NODE ATTRIBUTES:  
 DEFAULT MLEVEL IS ATOM  
 DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:  
 RING(S) ARE ISOLATED OR EMBEDDED  
 NUMBER OF NODES IS 10

STEREO ATTRIBUTES: NONE  
 L5 SCR 2043  
 L7 2048 SEA FILE=REGISTRY SSS FUL L3 AND L5  
 L8 STR

```

      11
      O
      |
G1~Si~N~G1      Ak~N      Ak~Si      O~Ak
3  1  2  4      @5 @6      @7 @8      @9 @10

```

VAR G1=H/AK/CB/5/6/7/8/9/10  
 NODE ATTRIBUTES:  
 DEFAULT MLEVEL IS ATOM  
 DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:  
 RING(S) ARE ISOLATED OR EMBEDDED  
 NUMBER OF NODES IS 11

STEREO ATTRIBUTES: NONE  
 L10 277 SEA FILE=REGISTRY SUB=L7 SSS FUL L8  
 L18 1771 SEA FILE=REGISTRY ABB=ON PLU=ON L7 NOT L10  
 L19 1164 SEA FILE=HCAPLUS ABB=ON PLU=ON L18

=> fil hcap  
 FILE 'HCAPLUS' ENTERED AT 13:40:22 ON 12 MAY 2005  
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=> d 125 1-19 ibib abs hitstr hitind

L25 ANSWER 1 OF 19 HCAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 2005:116495 HCAPLUS  
 DOCUMENT NUMBER: 142:229088  
 TITLE: Polymerizable polysilazane compositions, their  
 films with excellent heat resistance,  
 transparency, and flexibility, and display  
 devices using them  
 INVENTOR(S): Tashiro, Yuji  
 PATENT ASSIGNEE(S): Clariant Japan K. K., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 25 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

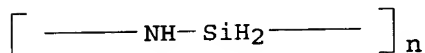
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
JP 2005036089	A2	20050210	JP 2003-199288	2003 0718
PRIORITY APPLN. INFO.:			JP 2003-199288	2003 0718

AB The compns., useful for dielec. layers, ribs, and/or sealants for PDP and interlayer dielects. and/or alignment films for LCD, contain random organosilazanes (A) bearing units (R1R2SiNH)p, (R1'R2'SiO)p', and (R3R4SiR7SiR5R6)q (R1-6, R1', R2' = H, alkyl, alkenyl, etc., R7 = divalent aromatic group; p, p', q >0) at ratio of Si-O bond to (Si-N bond + SiO bond) 0.50-0.99 and silazanes bearing units (SiH2NH)n (n ≥ 1).

IT 149013-47-8P, Ammonia-dichlorosilane copolymer, sru (polymerizable compns. containing organic and inorg. silazanes for films with good heat **resistance**, transparency, and flexibility for PDP and LCD)

RN 149013-47-8 HCAPLUS

CN Poly[(imino)(silylene)] (9CI) (CA INDEX NAME)



IC ICM C08G077-54

CC 74-13 (Radiation Chemistry, **Photochemistry**, and **Photographic** and Other Reprographic Processes)  
Section cross-reference(s): 37, 38

IT 90387-00-1P, Ammonia-dichlorosilane copolymer 149013-47-8P  
, Ammonia-dichlorosilane copolymer, sru 841260-07-9P  
841260-09-1P  
(polymerizable compns. containing organic and inorg. silazanes for films with good heat **resistance**, transparency, and flexibility for PDP and LCD)

L25 ANSWER 2 OF 19 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2004:778787 HCAPLUS

DOCUMENT NUMBER: 141:297468

TITLE: Protective films with good blocking resistance for printed products, and method for protecting the printed products

INVENTOR(S): Okaue, Etsuo; Onishi, Hiroyuki

PATENT ASSIGNEE(S): Seiko Epson Corp., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 14 pp.  
CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
JP 2004262140	A2	20040924	JP 2003-55961	



2003  
0303

PRIORITY APPLN. INFO.:

JP 2003-55961

2003  
0303

AB The films comprise supports, first protective layers for forming surface protective layers on printed products, and second protective layers for forming adhesive layers on the printed products, wherein the first protective layers are formed by applying coating compns. containing thermoplastic polymers, reactive silane compds., and colloidal silica on the supports, and heat-drying. Thus, an ink-jet printed sheet was laminated with a protective film including (a) a polypropylene support film (OPU 1), (b) a coated layer prepared from an acrylic polymer emulsion (Voncoat EC 819), colloidal silica (ST 10), methyltrimethoxysilane, and a UV absorber (ULC 1385MG), and (c) a coated layer containing Mowinyl 870, and separated from the support film to give an overcoated printed product with good light and scratch resistance.

IT 30140-12-6P, Poly(1,1,3,3-tetramethyldisilazane)  
(protective films with good blocking **resistance** for  
printed products)

RN 30140-12-6 HCAPLUS

CN Silanamine, N-(dimethylsilyl)-1,1-dimethyl-, homopolymer (9CI)  
(CA INDEX NAME)

CM 1

CRN 15933-59-2

CMF C4 H15 N Si2

$\text{Me}_2\text{SiH}-\text{NH}-\text{SiHMe}_2$

IC ICM B32B027-18

ICS B32B007-06; B41J002-01; B41M005-00

CC 42-11 (Coatings, Inks, and Related Products)

Section cross-reference(s): 74

IT 25498-03-7P, Methyltrimethoxysilane homopolymer

30140-12-6P, Poly(1,1,3,3-tetramethyldisilazane)

90751-55-6P 153315-80-1P 162023-57-6P 777861-39-9P

(protective films with good blocking **resistance** for  
printed products)

L25 ANSWER 3 OF 19 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2003:673897 HCAPLUS

DOCUMENT NUMBER: 139:204847

TITLE: Organic-inorganic polymer hybrid films with  
excellent transparency, heat resistance, and  
flexibility, their manufacture, and their use

INVENTOR(S): Okubo, Yasushi; Yamada, Taketoshi; Kita,  
Hiroshi

PATENT ASSIGNEE(S): Konica Co., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 9 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

## PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003238688	A2	20030827	JP 2002-39152	2002 0215
PRIORITY APPLN. INFO.:			JP 2002-39152	2002 0215

AB The films, useful for transparent substrates for electronic displays, electrooptical elements, touch panels, and solar cells, are manufactured from active H-containing polymers (cellulose esters, preferably) and condensation-polymerizable metal compds. (alkoxides, preferably) without adding water (by casting, preferably). The films are preferably manufactured by solvent casting solns. with water content  $\leq 0.5\%$ .

IT 583053-20-7P, Daicel L 50-tetraaisocyanatosilane copolymer (manufacture of organic-inorg. polymer hybrid films for optical use with good transparency, heat **resistance**, and flexibility by casting solns. containing cellulose esters and alkoxides with extremely low water content)

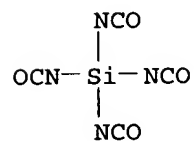
RN 583053-20-7 HCAPLUS

CN Cellulose, diacetate, polymer with tetraaisocyanatosilane (9CI)  
(CA INDEX NAME)

CM 1

CRN 3410-77-3

CMF C4 N4 O4 Si



CM 2

CRN 9035-69-2

CMF C2 H4 O2 . 1/2 Unspecified

CM 3

CRN 9004-34-6

CMF Unspecified

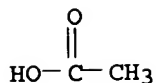
CCI PMS, MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

CM 4

CRN 64-19-7

CMF C2 H4 O2



IC ICM C08G077-42  
ICS B29C041-12; C08G079-00; G02F001-1333; G06F003-033;  
H05B033-02; H05B033-14; H01L031-04; B29L007-00

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
Section cross-reference(s): 38, 52, 74

IT 546-68-9DP, Tetraisopropoxytitanium, reaction products with norbornene polymer 150872-17-6DP, Arton, hydrolyzed, reaction products with tetraisopropoxytitanium 583053-16-1P, Cellulose acetate propionate-tetraisopropoxytitanium copolymer 583053-17-2P, Tetraisopropoxytitanium-triacetylcellulose copolymer 583053-18-3P 583053-19-4P 583053-20-7P, Daicel L 50-tetraisocyanatosilane copolymer  
(manufacture of organic-inorg. polymer hybrid films for optical use with good transparency, heat resistance, and flexibility by casting solns. containing cellulose esters and alkoxides with extremely low water content)

L25 ANSWER 4 OF 19 HCAPLUS COPYRIGHT 2005 ACS on STN  
ACCESSION NUMBER: 1999:407182 HCAPLUS  
DOCUMENT NUMBER: 131:94856  
TITLE: Crosslinked polycarbonate, its manufacture, and electrophotographic photoreceptor containing it as binder  
INVENTOR(S): Hikosaka, Takaaki  
PATENT ASSIGNEE(S): Idemitsu Kosan Co., Ltd., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 97 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 11172003	A2	19990629	JP 1997-343057	1997 1212

PRIORITY APPLN. INFO.: JP 1997-343057  
1997  
1212

AB The crosslinked polycarbonate is manufactured by hydrosilylation of polycarbonates having a C:C linkage with Si compds. having  $\geq 2$  Si-H linkages in the presence of transition metal catalysts, Cl-containing catalysts, and/or radicals. The crosslinked polycarbonate obtained by the above method is also claimed. The electrophotog. photoreceptor contains the above polycarbonate in a photosensitive layer. The photoreceptor shows improved abrasion resistance and durability in repeated use.

IT 229621-69-6P  
(manufacture of silyl-crosslinked polycarbonate for binder of electrophotog. photoreceptor with improved abrasion

resistance)  
 RN 229621-69-6 HCAPLUS  
 CN Carbonic dichloride, polymer with N-(dimethylsilyl)-1,1-dimethylsilanamine, 4,4'-(1-methylethylidene)bis[phenol] and 4,4'-(1-methylethylidene)bis[2-(2-propenyl)phenol] (9CI) (CA INDEX NAME)

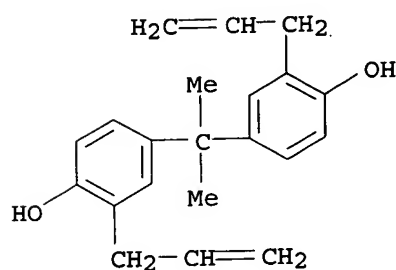
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CRN 15933-59-2  
 CMF C4 H15 N Si2

Me<sub>2</sub>SiH-NH-SiHMe<sub>2</sub>

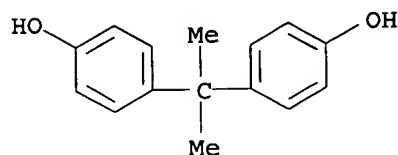
CM 2

CRN 1745-89-7  
 CMF C21 H24 O2



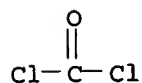
CM 3

CRN 80-05-7  
 CMF C15 H16 O2



CM 4

CRN 75-44-5  
 CMF C Cl2 O



IC ICM C08G077-448  
ICS C08G064-42; C08G077-60; G03G005-05; C08G064-04  
CC 74-3 (Radiation Chemistry, **Photochemistry**, and **Photographic** and Other Reprographic Processes)  
Section cross-reference(s): 38  
IT 75-44-5DP, Phosgene, polymers with hydroxyphenylpropyl- or dimethylhydroxysilyl-terminated dimethylsilanediol-allylmethylsilanediol copolymer and dihydroxybiphenyl and bis(dimethylsilyl)benzene 80-05-7DP, 2,2-Bis(4-hydroxyphenyl)propane, polymer with trimethylsilyl-terminated diphenylsilanediol-methylsilanediol copolymer, bis(allylhydroxyphenyl)propane, and phosgene 92-88-6DP, 4,4'-Dihydroxybiphenyl, polymers with hydroxyphenylpropyl- or dimethylhydroxysilyl-terminated dimethylsilanediol-allylmethylsilanediol copolymer and phosgene and bis(dimethylsilyl)benzene 2488-01-9DP, 1,4-Bis(dimethylsilyl)benzene, polymers with hydroxyphenylpropyl- or dimethylhydroxysilyl-terminated dimethylsilanediol-allylmethylsilanediol copolymer and phosgene and dihydroxybiphenyl 24038-68-4DP, 2,2-Bis(3-phenyl-4-hydroxyphenyl)propane, polymers with hydroxyphenylpropyl- or dimethylhydroxysilyl-terminated dimethylsilanediol-allylmethylsilanediol copolymer and phosgene and bis(dimethylsilyl)benzene 31900-57-9DP, Trimethylsilyl and dimethylhydroxyphenylpropylsiloxylmethylsilyl terminated 155665-02-4DP, hydroxyphenylpropyl-terminated, polymers with dihydroxybiphenyl and phosgene and dimethylsilylbenzene 155904-19-1DP, Diphenylsilanediol-methylsilanediol copolymer, trimethylsilyl-terminated, polymer with bis(allylhydroxyphenyl)propane, bis(hydroxyphenyl)propane, and phosgene 229621-54-9P 229621-55-0P 229621-56-1P 229621-57-2P 229621-58-3P 229621-59-4P 229621-60-7P 229621-62-9P 229621-64-1P 229621-65-2P 229621-66-3P 229621-67-4P 229621-68-5P 229621-69-6P 229621-71-0P  
(manufacture of silyl-crosslinked polycarbonate for binder of electrophotog. photoreceptor with improved abrasion resistance)

L25 ANSWER 5 OF 19 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1998:224415 HCAPLUS

DOCUMENT NUMBER: 128:263822

TITLE: Poly(siloxymethylene glycol) as a new water soluble electron-beam resist

AUTHOR(S): Nagasaki, Yukio; Kato, Masao; Aoki, Hidetoshi; Tokuda, Takashi

CORPORATE SOURCE: Materials Science Department, Science University of Tokyo, Noda, 278, Japan

SOURCE: Polymer Preprints (American Chemical Society, Division of Polymer Chemistry) (1998), 39(1), 467-468

CODEN: ACPPAY; ISSN: 0032-3934

PUBLISHER: American Chemical Society, Division of Polymer Chemistry

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Poly(divinylsiloxymethylene glycol) (PVSE) water soluble electron-beam resist show very good lithog. characteristics. A 1 mm pattern was obtained at a very low electron-beam exposure (2.4  $\mu\text{C}/\text{cm}^2$ ) which was developed by cold water, thus retaining high durability against  $\text{O}_2$  reactive ion etching. PVSE also worked as a fairly sensitive neg. UV photoresist when the polymer was coupled with

tetramethylolmethanetetra(3-mercaptopropionate) crosslinker and benzoin Me ether sensitizer.

IT 181177-81-1, Bis(diethylamino)divinylsilane-poly(ethylene oxide) copolymer  
(poly(siloxyethylene glycol) new water soluble electron-beam resist)

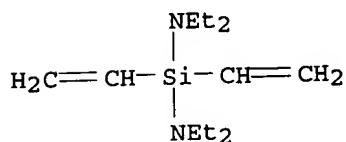
RN 181177-81-1 HCAPLUS

CN Silanedi-amine, 1,1-diethenyl-N,N,N',N'-tetraethyl-, polymer with  $\alpha$ -hydro- $\omega$ -hydroxypoly(oxy-1,2-ethanediyl) (9CI) (CA INDEX NAME)

CM 1

CRN 127410-30-4

CMF C12 H26 N2 Si

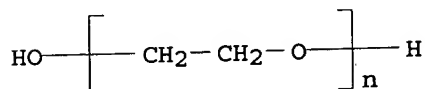


CM 2

CRN 25322-68-3

CMF (C2 H4 O)<sub>n</sub> H2 O

CCI PMS



CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
Section cross-reference(s): 37

IT 181177-81-1, Bis(diethylamino)divinylsilane-poly(ethylene oxide) copolymer  
(poly(siloxyethylene glycol) new water soluble electron-beam resist)

REFERENCE COUNT: 31 THERE ARE 31 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 6 OF 19 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1998:184513 HCAPLUS

DOCUMENT NUMBER: 128:263956

TITLE: Patterning of insulating film and photosensitive composition containing silicon polymers therefor

INVENTOR(S): Mikoshiba, Satoshi; Hayase, Shuji; Nakano, Yoshihiko; Kawada, Rikako

PATENT ASSIGNEE(S): Toshiba Corp., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 27 pp.  
CODEN: JKXXAF

DOCUMENT TYPE: Patent

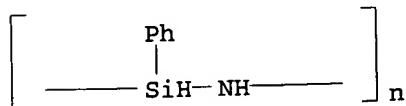
LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 10079381	A2	19980324	JP 1996-233199	1996 0903
JP 3529953	B2	20040524		
US 6004730	A	19991221	US 1997-921613	1997 0902

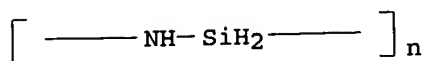
PRIORITY APPLN. INFO.: JP 1996-233199 A  
 1996  
 0903

AB A pattern of an insulating film, useful for semiconductor devices, liquid crystal displays, etc., is formed by (1) coating a substrate with a photosensitive composition containing a polymer comprising a monomer unit (SiR<sub>1</sub>R<sub>2</sub>NR<sub>3</sub>) [I; R<sub>1</sub> - R<sub>3</sub> = H, (un)substituted alkyl, (un)substituted aryl] and a polymer comprising a monomer unit (SiR<sub>4</sub>R<sub>5</sub>) [II; R<sub>4</sub> - R<sub>5</sub> = H, (un)substituted alkyl, (un)substituted aryl], (2) selectively exposing the film to light and developing, and (3) heating the resulting film pattern. The combination of the Si-containing polymer may be (a) a polymer comprising II and polymer comprising a monomer unit (SiHR<sub>6</sub>O) [III; R<sub>6</sub> = H, (un)substituted alkyl, (un)substituted aryl, siloxane bond], (b) a polymer comprising I, a polymer comprising II, and a polymer comprising III, or (c) a polymer comprising I and a polymer comprising II. In the patterning the film may be heated prior to development. The photosensitive composition is developable with alkalis, and provides an insulating film having low dielec. constant

IT 103728-41-2, Poly[imino(phenylsilylene)]  
 149013-47-8, Poly[(imino)(silylene)]  
 (alkali-developable photoresists containing polysilazanes, polysilanes, and/or polysiloxanes for patterning of insulating film)  
 RN 103728-41-2 HCAPLUS  
 CN Poly[imino(phenylsilylene)] (9CI) (CA INDEX NAME)



RN 149013-47-8 HCAPLUS  
 CN Poly[(imino)(silylene)] (9CI) (CA INDEX NAME)



IC ICM H01L021-312  
 ICS C08L083-16; G03F007-075; H01L021-027; C08G077-62  
 CC 74-5 (Radiation Chemistry, Photochemistry, and

**Photographic and Other Reprographic Processes)**

Section cross-reference(s): 76

IT 28883-63-8, Poly(dimethylsilylene) 29386-52-5 30107-43-8  
 31324-77-3 51176-28-4, Poly(diphenylsilylene) 76188-55-1,  
 Poly(methylphenylsilylene) 95584-36-4, Poly(phenylsilylene)  
 99936-07-9 103728-41-2, Poly[imino(phenylsilylene)]  
 149013-47-8, Poly[(imino)(silylene)] 153315-81-2  
 159655-38-6  
 (alkali-developable photoresists containing  
 polysilazanes, polysilanes, and/or polysiloxanes for patterning  
 of insulating film)

L25 ANSWER 7 OF 19 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1997:626645 HCAPLUS

DOCUMENT NUMBER: 127:324327

TITLE: Water-soluble silicon containing polymer resist

AUTHOR(S): Aoki, Hidetoshi; Tokuda, Takashi; Nagasaki, Yukio; Kato, Masao

CORPORATE SOURCE: R &amp; D Center, Hokushin Corporation, Yokohama, 230, Japan

SOURCE: Journal of Polymer Science, Part A: Polymer Chemistry (1997), 35(14), 2827-2833  
 CODEN: JPACEC; ISSN: 0887-624X

PUBLISHER: Wiley

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Poly(divinylsiloxyethylene glycol), which consists of alternating oligo (ethylene glycol)s (MW = 300) and divinylsiloxanes were prepared by a polycondensation reaction (Mn = 6500-9300, Mw/Mn = 2.01-2.27). The obtained polymer (PVSE300) showed a lower critical solution temperature (LCST) at 10.5°C, meaning that the polymer was soluble in water below the LCST. The glass transition temperature (Tg) and onset temperature of degradation (Td) of the PVSE300 were -72.5 and +317.5°C, resp. The hydrolytic stability of the PVSE300 in aqueous media was also examined and it was found that PVSE300 was fairly stable in cold water. The lithog. characteristics of PVSE300 were examined against UV and electron-beam (EB) exposure and it was found that the PVSE300 film showed a neg. character when developed by cold water. The photosensitivity parameter, Dg50, which denotes the dose at half remaining film thickness after development, against EB exposure was extremely high (1.0 µC/cm<sup>2</sup>) when a probe current and an accelerating voltage was 100 pA and 20 kV, resp. A high durability for O<sub>2</sub> reactive ion etching (O<sub>2</sub> RIE) was also observed. The characteristics of PVSE300 against photoirradn. were also examined

IT 181177-81-1P

(water-soluble silicon containing polymer resist)

RN 181177-81-1 HCAPLUS

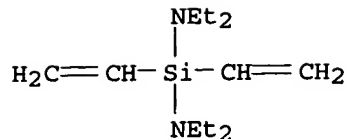
CN Silanediamine, 1,1-diethenyl-N,N,N',N'-tetraethyl-, polymer with α-hydro-ω-hydroxypoly(oxy-1,2-ethanediyl) (9CI) (CA INDEX NAME)

CM 1

CRN 127410-30-4

CMF C12 H26 N2 Si



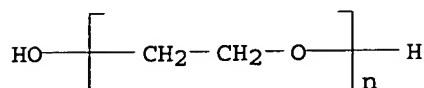


CM 2

CRN 25322-68-3

CMF (C2 H4 O)<sub>n</sub> H2 O

CCI PMS



CC 74-1 (Radiation Chemistry, **Photochemistry**, and  
**Photographic** and Other Reprographic Processes)  
 Section cross-reference(s): 35

IT 181177-81-1P

(water-soluble silicon containing polymer resist)

REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE  
 FOR THIS RECORD. ALL CITATIONS AVAILABLE  
 IN THE RE FORMAT

L25 ANSWER 8 OF 19 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1997:75294 HCAPLUS

DOCUMENT NUMBER: 126:257418

TITLE: Direct patterning of spin-on-glass materials  
 by ArF excimer laser irradiation and their new  
 application to hard-mask processes

AUTHOR(S): Morisawa, Taku; Fukuda, Hiroshi

CORPORATE SOURCE: Central Research Laboratory, Hitachi, Ltd.,  
 Tokyo, 185, Japan

SOURCE: Japanese Journal of Applied Physics, Part 1:  
 Regular Papers, Short Notes & Review Papers  
 (1996), 35(12B), 6366-6369

CODEN: JAPNDE; ISSN: 0021-4922

PUBLISHER: Japanese Journal of Applied Physics

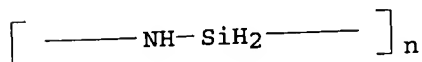
DOCUMENT TYPE: Journal

LANGUAGE: English

AB Several spin-on-glass (SOG) materials were examined as single layer  
 resists for ArF excimer laser lithog., with the goal of directly  
 forming a hard mask from these materials for dry-etching  
 underlying metal films. Perhydro-silazane (PHSN) was found to be  
 photo-reactive at 193 nm wavelength as well as  
 polyphenylmethyl-silsesquioxane (PMSQ) and polyhydroxybenzyl-  
 silsesquioxane (HSQ), which we have reported previously. These  
 materials showed a sufficient resolution performance and sensitivity  
 at 193 nm. The Fourier-transform IR (FTIR) and X-ray  
 photoelectron spectrometry (XPS) analyses showed that the basic  
 reaction is photo-oxidation, though the imaging mechanism in each  
 material is quite different. The etching resistance of these  
 materials was significantly improved by special treatment after  
 patterning, whereas those without the treatment were insufficient.

For example, etching rate of PHSN after baking in steam ambient was comparable to that for CVD SiO<sub>2</sub> in RIE using SF<sub>6</sub> gas. 0.2 μm patterns were transferred into poly-Si films by dry-etching using these materials as hard masks.

IT 149013-47-8, Poly[(imino)(silylene)]  
(resist; direct patterning of spin-on-glass materials by ArF excimer laser irradiation and their application to hard-mask processes)  
RN 149013-47-8 HCAPLUS  
CN Poly[(imino)(silylene)] (9CI) (CA INDEX NAME)



CC 76-3 (Electric Phenomena)  
Section cross-reference(s): 74  
IT 90387-00-1 149013-47-8, Poly[(imino)(silylene)]  
(resist; direct patterning of spin-on-glass materials by ArF excimer laser irradiation and their application to hard-mask processes)

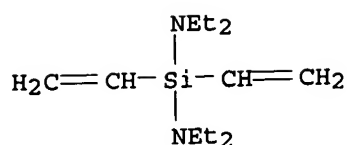
L25 ANSWER 9 OF 19 HCAPLUS COPYRIGHT 2005 ACS on STN  
ACCESSION NUMBER: 1997:51116 HCAPLUS  
DOCUMENT NUMBER: 126:118497  
TITLE: Poly(divinylsiloxymethylene glycol). Synthesis and photoresist characteristics  
AUTHOR(S): Aoki, Hidetoshi; Tokuda, Takashi; Nagasaki, Yukio; Kato, Masao  
CORPORATE SOURCE: R & D Center, Hokushin Corporation, Yokohama, 230, Japan  
SOURCE: Macromolecular Rapid Communications (1997), 18(1), 31-36  
CODEN: MRCOE3; ISSN: 1022-1336  
PUBLISHER: Huethig & Wepf  
DOCUMENT TYPE: Journal  
LANGUAGE: English

AB Poly(siloxymethylene glycol) with pendent vinyl groups (PVSE) was synthesized by polycondensation of oligoethylene glycol (MW = 300) and (Et<sub>2</sub>N)<sub>2</sub>Si(CH<sub>2</sub>CH<sub>2</sub>)<sub>2</sub>. PVSE300 thus obtained is soluble in cold water. The PVSE300 coupled with a polythiol compound shows properties of a neg. working photoresist. A neg. tone image was obtained by development with water at 4°. PVSE300 is a new type of Si-containing polymer resist which can be developed by water.

IT 181177-81-1P, Bis(diethylamino)divinylsilane-poly(ethylene oxide) copolymer  
(preparation and photoresist properties of vinyl group-containing poly(siloxymethylene glycol))  
RN 181177-81-1 HCAPLUS  
CN Silanediamine, 1,1-diethenyl-N,N,N',N'-tetraethyl-, polymer with α-hydro-ω-hydroxypoly(oxy-1,2-ethanediyl) (9CI) (CA INDEX NAME)

CM 1

CRN 127410-30-4  
CMF C12 H26 N2 Si

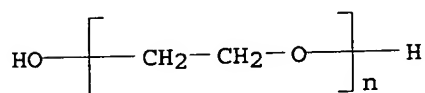


CM 2

CRN 25322-68-3

CMF (C2 H4 O)n H2 O

CCI PMS



CC 37-3 (Plastics Manufacture and Processing)

Section cross-reference(s): 38, 74

IT 181177-81-1P, Bis(diethylamino)divinylsilane-poly(ethylene oxide) copolymer  
(preparation and photoresist properties of vinyl group-containing poly(siloxyethylene glycol))

L25 ANSWER 10 OF 19 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1996:448845 HCAPLUS

DOCUMENT NUMBER: 125:208225

TITLE: Poly(divinylsiloxyethylene glycol). Synthesis and resist characteristics

AUTHOR(S): Aoki, Hidetoshi; Tokuda, Takashi; Nagasaki, Yukio; Kato, Masao

CORPORATE SOURCE: R&amp;D Center, Hokushin Corp., Yokohama, 230, Japan

SOURCE: Journal of Photopolymer Science and Technology (1996), 9(1), 105-108

CODEN: JSTEEW; ISSN: 0914-9244

PUBLISHER: Technical Association of Photopolymers, Japan

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Poly(divinylsiloxyethylene glycol) was characterized as a water developable neg. electron-beam resist of high sensitivity. The resist was obtained by polycondensation of oligo(ethylene glycol) and bis(diethylamino)divinylsilane and coated from THF solution on a silicon substrate. The resist film was exposed with scanning electron microscope (dose range from 0.01 to 30  $\mu\text{C}/\text{cm}^2$ ) and developed in water (4°C) for 10 min.

IT 181177-81-1P  
(poly(divinylsiloxyethylene glycol) as water developable neg. electron-beam resist)

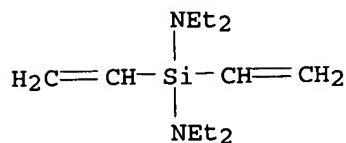
RN 181177-81-1 HCAPLUS

CN Silanediamine, 1,1-diethenyl-N,N,N',N'-tetraethyl-, polymer with  $\alpha$ -hydro- $\omega$ -hydroxypoly(oxy-1,2-ethanediyl) (9CI) (CA INDEX NAME)

CM 1

CRN 127410-30-4

CMF C12 H26 N2 Si

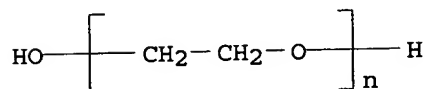


CM 2

CRN 25322-68-3

CMF (C2 H4 O)<sub>n</sub> H2 O

CCI PMS



CC 74-5 (Radiation Chemistry, **Photochemistry**, and  
**Photographic** and Other Reprographic Processes)

IT 181177-81-1P  
 (poly(divinylsiloxymethylene glycol) as water developable neg.  
 electron-beam **resist**)

L25 ANSWER 11 OF 19 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1995:777077 HCAPLUS

DOCUMENT NUMBER: 123:301357

TITLE: UV, x-ray and e-beam sensitive plasma  
 polymerized resists

AUTHOR(S): Takenouchi, H.; Senda, K.; uchida, T.;  
 Inanami, R.; Vinogradov, G. K.; Morita, Shinzo  
 CORPORATE SOURCE: Center for Cooperative Research in Advanced  
 Science and Technology, Nagoya University,  
 Nagoya, 464-01, Japan

SOURCE: Journal of Photopolymer Science and Technology  
 (1995), 8(4), 687-8  
 CODEN: JSTEEW; ISSN: 0914-9244

PUBLISHER: Technical Association of Photopolymers, Japan

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Silicon containing plasma polymerized resist films were exposed by UV and  
 synchrotron orbital radiation (SOR) irradiation in an oxygen ambient.  
 These patterned films are successfully developed by plasma  
 etching. For the SOR experiment, about 0.3 μm line pattern was  
 obtained. We are now preparing the experiment of electron beam patterning  
 by a conductive AFM for a nanometer lithog., because x-ray  
 sensitive resist have a sensitivity to the electron beam.

IT 27495-70-1, Hexamethyldisilazane homopolymer  
 (silicon containing plasma polymerized **resist** films for  
 synchrotron radiation exposure)

RN 27495-70-1 HCAPLUS

CN Silanamine, 1,1,1-trimethyl-N-(trimethylsilyl)-, homopolymer (9CI)  
 (CA INDEX NAME)

CM 1

CRN 999-97-3  
CMF C6 H19 N Si2

Me<sub>3</sub>Si-NH-SiMe<sub>3</sub>

CC 74-5 (Radiation Chemistry, **Photochemistry**, and  
**Photographic** and Other Reprographic Processes)  
IT 27495-70-1, Hexamethyldisilazane homopolymer  
(silicon containing plasma polymerized **resist** films for  
synchrotron radiation exposure)

L25 ANSWER 12 OF 19 HCAPLUS COPYRIGHT 2005 ACS on STN  
ACCESSION NUMBER: 1995:733680 HCAPLUS  
DOCUMENT NUMBER: 123:213232  
TITLE: Photosensitive resin composition containing  
polyimide with silyl ester group  
INVENTOR(S): Okinoshima, Hiroshige; Kato, Hideto  
PATENT ASSIGNEE(S): Shinetsu Chemical Industry Co., Ltd., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 11 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 07140659	A2	19950602	JP 1993-179954	1993 0625

PRIORITY APPLN. INFO.: JP 1993-179954  
1993  
0625

AB The composition comprises a polymer -COX(COOSiR<sub>1</sub>R<sub>2</sub>R<sub>3</sub>)<sub>2</sub>CONHYNH- [X =  
tetravalent organic group with aromatic or alicyclic group; Y = divalent  
organic group; R<sub>1</sub>-3 = H, C1-10 (substituted) monovalent hydrocarbon]  
and photosensitive acid generating agent. An elec. circuit  
protective film prepared by hardening the photosensitive composition is  
also claimed. The composition shows high sensitivity, swelling on  
development is prevented, and is useful for the protective film  
for elec. circuits.

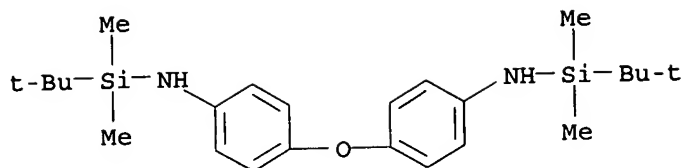
IT 168201-06-7P 168201-08-9P 168201-09-0P  
(photoresist composition containing polyimide with silyl ester  
group and photosensitive acid generator)

RN 168201-06-7 HCAPLUS

CN 1,3-Isobenzofurandione, 5,5'-carbonylbis-, polymer with  
N,N'-(oxydi-4,1-phenylene)bis[1-(1,1-dimethylethyl)-1,1-  
dimethylsilanamine] and N,N'-[(1,1,3,3-tetramethyl-1,3-  
disiloxanediyl)di-3,1-propanediyl]bis[1,1,1-trimethylsilanamine]  
(9CI) (CA INDEX NAME)

CM 1

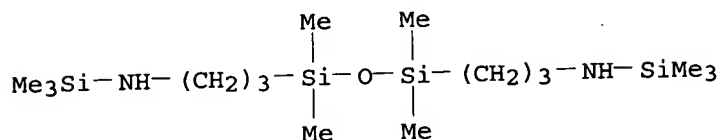
CRN 151565-12-7  
CMF C24 H40 N2 O Si2



CM 2

CRN 151565-10-5

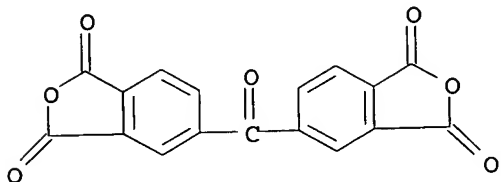
CMF C16 H44 N2 O Si4



CM 3

CRN 2421-28-5

CMF C17 H6 O7



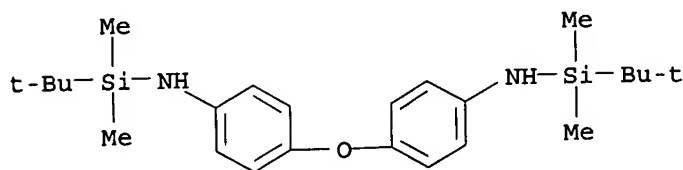
RN 168201-08-9 HCAPLUS

CN 1,3-Isobenzofurandione, 5,5'-(1,1,3,3-tetramethyl-1,3-disiloxanediyl)bis-, polymer with N,N'-(oxydi-4,1-phenylene)bis[1-(1,1-dimethylethyl)-1,1-dimethylsilanamine], N,N'-(oxydi-4,1-phenylene)bis[1,1,1-trimethylsilanamine] and 5,5'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]bis[1,3-isobenzofurandione] (9CI)  
(CA INDEX NAME)

CM 1

CRN 151565-12-7

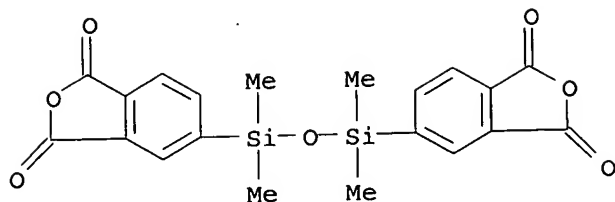
CMF C24 H40 N2 O Si2



CM 2

CRN 42297-28-9

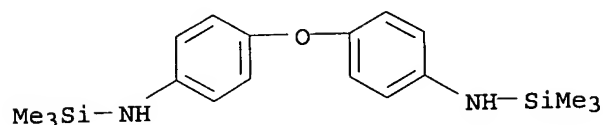
CMF C20 H18 O7 Si2



CM 3

CRN 1571-54-6

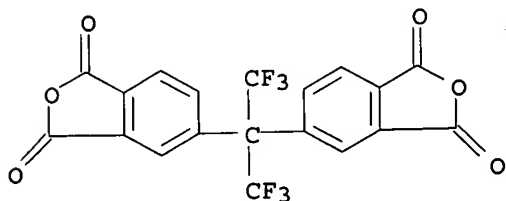
CMF C18 H28 N2 O Si2



CM 4

CRN 1107-00-2

CMF C19 H6 F6 O6



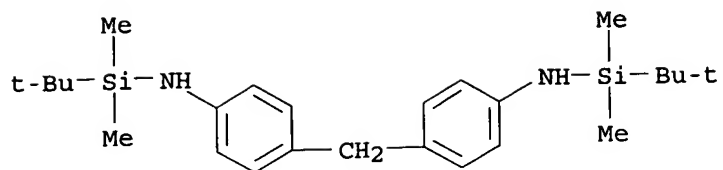
RN 168201-09-0 HCAPLUS

CN 1,3-Isobenzofurandione, 5,5'-carbonylbis-, polymer with  
 N,N'-(methylenedi-4,1-phenylene)bis[1-(1,1-dimethylethyl)-1,1-  
 dimethylsilanamine], N,N'-(oxydi-4,1-phenylene)bis[1,1,1-  
 trimethylsilanamine] and 5,5'-(1,1,3,3-tetramethyl-1,3-  
 disiloxanediyl)bis[1,3-isobenzofurandione] (9CI) (CA INDEX NAME)

CM 1

CRN 151565-35-4

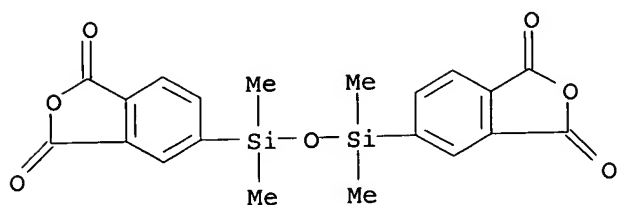
CMF C25 H42 N2 Si2



CM 2

CRN 42297-28-9

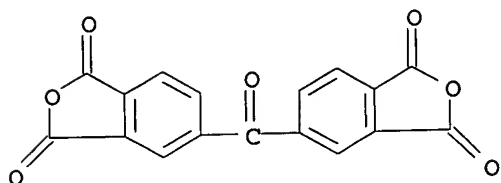
CMF C20 H18 O7 Si2



CM 3

CRN 2421-28-5

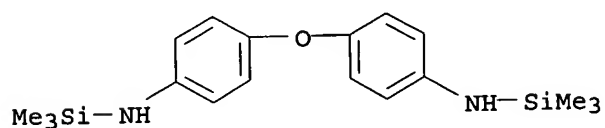
CMF C17 H6 O7



CM 4

CRN 1571-54-6

CMF C18 H28 N2 O Si2



IC ICM G03F007-038

ICS C08L079-08; G03F007-004; G03F007-075; H01L021-312

CC 74-5 (Radiation Chemistry, **Photochemistry**, and  
**Photographic** and Other Reprographic Processes)

Section cross-reference(s): 76

IT 168201-06-7P 168201-08-9P 168201-09-0P

(photoresist composition containing polyimide with silyl ester



group and photosensitive acid generator)

L25 ANSWER 13 OF 19 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1991:570735 HCAPLUS

DOCUMENT NUMBER: 115:170735

TITLE: Disk shaped VUV + oxygen source used as resist  
asher and resist developer

AUTHOR(S): Hattori, Shuzo; Collins, George; Yu, Zenqi;  
Sugimoto, Dai; Saita, Masahiro

CORPORATE SOURCE: Dep. Electoro Mech. Eng., NISRI, Nagoya, 468,  
Japan

SOURCE: Proceedings of SPIE-The International Society  
for Optical Engineering (1991),  
1463 (Opt./Laser Microlithogr. 4), 539-50  
CODEN: PSISDG; ISSN: 0277-786X

DOCUMENT TYPE: Journal

LANGUAGE: English

AB An 8-cm-diameter, disk-shaped oxygen plasma was used both to ash and  
develop resists located in a plasma-free region. The resist  
surface is exposed to both 130.6 nm flux (10-2W cm-2 Sr-1 oxygen  
resonance line) as well as an atomic oxygen flux (1015 atoms cm-2  
sec-1). A high ashing rate of 1.5 µm per min is obtained at  
100°, with a rather low apparent excitation energy of 1.07  
kcal/mol. In contrast, by introducing 8 atomic % silicon into  
plasma-polymerized styrene, an unmeasurable etch rate was observed after  
a brief induction time to form a Si-O-C containing protective layer  
with a 0.2µm thickness loss. These results show a potential  
ability of the plasma apparatus for use as a low temperature defect-free  
resist ashing and dry development system for silylated resists.

IT 68365-41-3, Hexamethyldisilazane-styrene polymer  
(asher-developer for silicon-containing **resist** of)

RN 68365-41-3 HCAPLUS

CN Silanamine, 1,1,1-trimethyl-N-(trimethylsilyl)-, polymer with  
ethenylbenzene (9CI) (CA INDEX NAME)

CM 1

CRN 999-97-3

CMF C6 H19 N Si2

Me<sub>3</sub>Si-NH-SiMe<sub>3</sub>

CM 2

CRN 100-42-5

CMF C8 H8

H<sub>2</sub>C=CH-Ph

CC 74-5 (Radiation Chemistry, **Photochemistry**, and  
**Photographic** and Other Reprographic Processes)

IT 68365-41-3, Hexamethyldisilazane-styrene polymer  
(asher-developer for silicon-containing **resist** of)

L25 ANSWER 14 OF 19 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1991:82743 HCAPLUS  
 DOCUMENT NUMBER: 114:82743  
 TITLE: Methylsilylated photosensitive polyamide compositions  
 INVENTOR(S): Furuya, Hiroyuki; Nagano, Kosaku  
 PATENT ASSIGNEE(S): Kanegafuchi Chemical Industry Co., Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 02217856	A2	19900830	JP 1989-38858	1989 0217

PRIORITY APPLN. INFO.: JP 1989-38858  
 1989  
0217

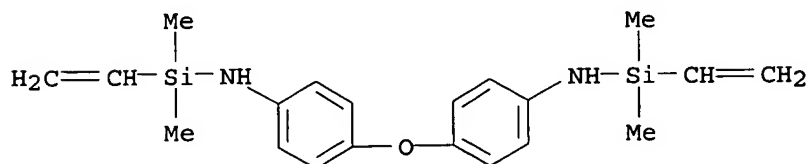
AB Title compns., useful for photoresists or elec. insulators, comprise -NHCOR1(CO2SiMe2Z)2CONHR2- units (R1 = tetravalent organic group; R2 = divalent organic group; Z = photosensitive substituent). Thus, 2.01 g oxydianiline and 2.56 g dimethylvinylsilyl chloride were reacted in the presence of Et3N in refluxing DMF, then 3.72 g the resulted vinyl-containing diamine ether was treated with 2.18 g pyromellitic dianhydride to give a polyamic acid solution, which was applied onto an Al plate, dried, imagewise exposed, developed by a mixture of acetone and DMF, and heated at 300° for 1.5 h to give a neg. patterned polyimide film showing weight loss temperature 492°.

IT 127536-86-1P 131914-90-4P  
 (preparation of, heat-resistant, photosensitive, for photoresist or elec. insulators)

RN 127536-86-1 HCAPLUS  
 CN 1H,3H-Benzo[1,2-c:4,5-c']difuran-1,3,5,7-tetrone, polymer with N,N'-(oxydi-4,1-phenylene)bis[1-ethenyl-1,1-dimethylsilanamine] (9CI) (CA INDEX NAME)

CM 1

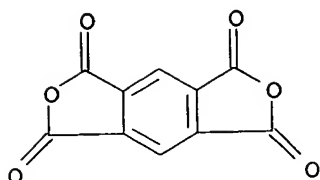
CRN 121783-91-3  
 CMF C20 H28 N2 O Si2



CM 2

CRN 89-32-7

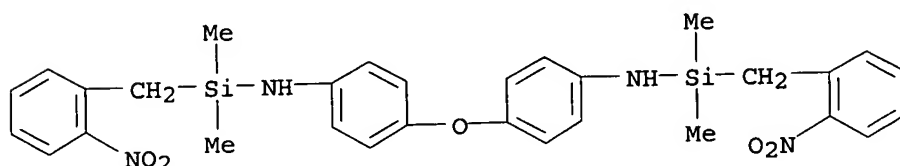
CMF C10 H2 O6



RN 131914-90-4 HCAPLUS  
 CN 1H,3H-Benzo[1,2-c:4,5-c']difuran-1,3,5,7-tetrone, polymer with  
 N,N'-(oxydi-4,1-phenylene)bis[dimethyl[(2-nitrophenyl)methyl]silanamine] (9CI) (CA INDEX NAME)

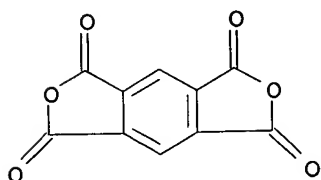
CM 1

CRN 131914-89-1  
 CMF C30 H34 N4 O5 Si2



CM 2

CRN 89-32-7  
 CMF C10 H2 O6



IC ICM G03F007-027  
 ICS C08G073-10; C08L079-08; G03F007-075; H01L021-027  
 CC 35-3 (Chemistry of Synthetic High Polymers)  
 Section cross-reference(s): 74  
 IT 127536-86-1P 131914-90-4P  
 (preparation of, heat-resistant, photosensitive, for  
 photoresist or elec. insulators)

L25 ANSWER 15 OF 19 HCAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 1990:562338 HCAPLUS  
 DOCUMENT NUMBER: 113:162338  
 TITLE: A study of novel heat-resistant polymers:  
 preparation of photosensitive fluorinated  
 polybenzoxazole precursors and physical  
 properties of polybenzoxazoles derived from

the precursors  
 AUTHOR(S): Yamaoka, Tsuguo; Nakajima, Nobuko; Koseki, Ken'ichi; Maruyama, Yutaka  
 CORPORATE SOURCE: Fac. Eng., Chiba Univ., Chiba, 260, Japan  
 SOURCE: Journal of Polymer Science, Part A: Polymer Chemistry (1990), 28(9), 2517-32  
 CODEN: JPACEC; ISSN: 0887-624X  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English

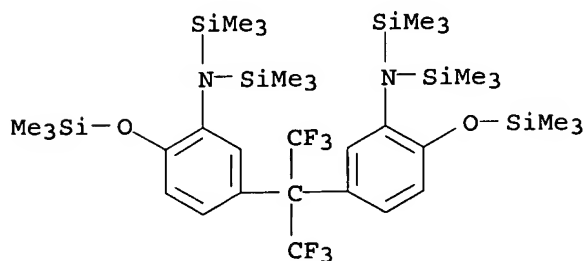
AB A series of novel photosensitive polybenzoxazole precursors were prepared from polycondensation of 2,2-bis(3,3'-amino-4,4'-hydroxyphenyl)hexafluoropropane with photosensitive dicarboxylic acid chlorides such as p-phenylenediacryloyl chloride and benzophenone-4,4'-dicarboxylic chloride. The precursors are soluble in common organic solvents owing to the presence of perfluoromethyl groups in the chain structure and insolubilized in the solvents upon irradiation with the light. Polybenzoxazole patterns with high resolution as well as high aspect ratio were reproduced by baking the precursor patterns at 300°. The pattern shrinkage on the conversion to polybenzoxazole was slight. The polybenzoxazole films offered good heat-resistance up to 400° in addition to good elec. properties.

IT 129701-94-6D, reaction products with methacryloyl chloride  
 129726-49-4 129726-52-9 129726-53-0  
 (heat-resistant fluorinated polybenzoxazole  
 precursor, as potential photoimaging and photoresist materials)

RN 129701-94-6 HCAPLUS  
 CN Benzoyl chloride, 4,4'-carbonylbis-, polymer with  
 N,N'-[[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]bis[5-  
 [(trimethylsilyl)oxy]-3,1-phenylene]]bis[1,1,1-trimethyl-N-  
 (trimethylsilyl)silanamine] (9CI) (CA INDEX NAME)

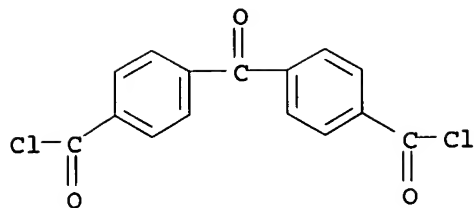
CM 1

CRN 129726-48-3  
 CMF C33 H60 F6 N2 O2 Si6



CM 2

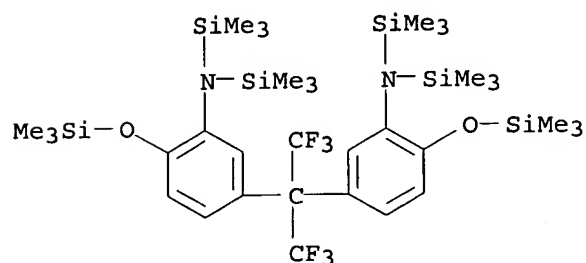
CRN 6423-31-0  
 CMF C15 H8 Cl2 O3



RN 129726-49-4 HCAPLUS  
 CN 2-Propenoyl chloride, 3,3'-(1,4-phenylene)bis-, polymer with  
 N,N'-[[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]bis[6-  
 [(trimethylsilyl)oxy]-3,1-phenylene]]bis[1,1,1-trimethyl-N-  
 (trimethylsilyl)silanamine] (9CI) (CA INDEX NAME)

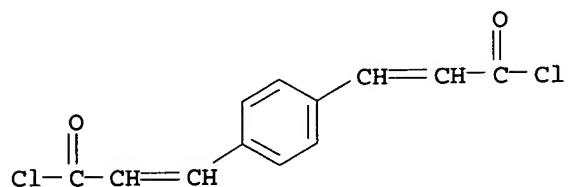
CM 1

CRN 129726-48-3  
 CMF C33 H60 F6 N2 O2 Si6



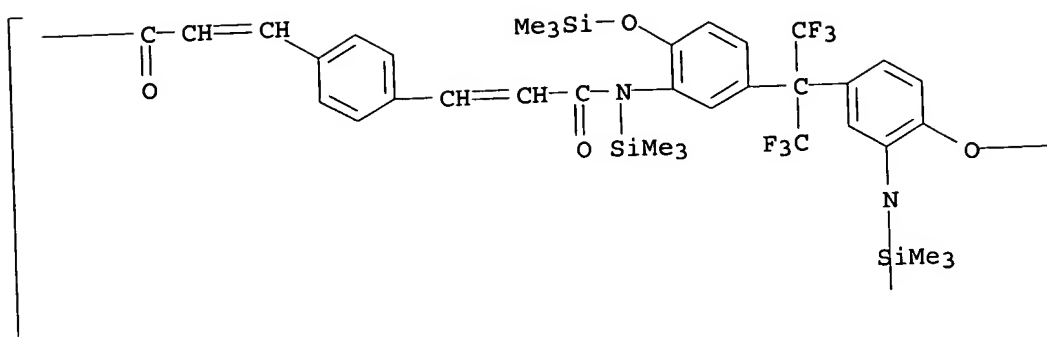
CM 2

CRN 35288-49-4  
 CMF C12 H8 Cl2 O2

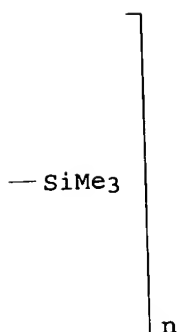


RN 129726-52-9 HCAPLUS  
 CN Poly[[ (trimethylsilyl) imino] [6- [ (trimethylsilyl) oxy] -1,3-  
 phenylene] [2,2,2-trifluoro-1-(trifluoromethyl)ethylidene] [4-  
 [ (trimethylsilyl) oxy] -1,3-phenylene] [ (trimethylsilyl) imino] (1-oxo-  
 2-propene-1,3-diyl) -1,4-phenylene (3-oxo-1-propene-1,3-diyl)] (9CI)  
 (CA INDEX NAME)

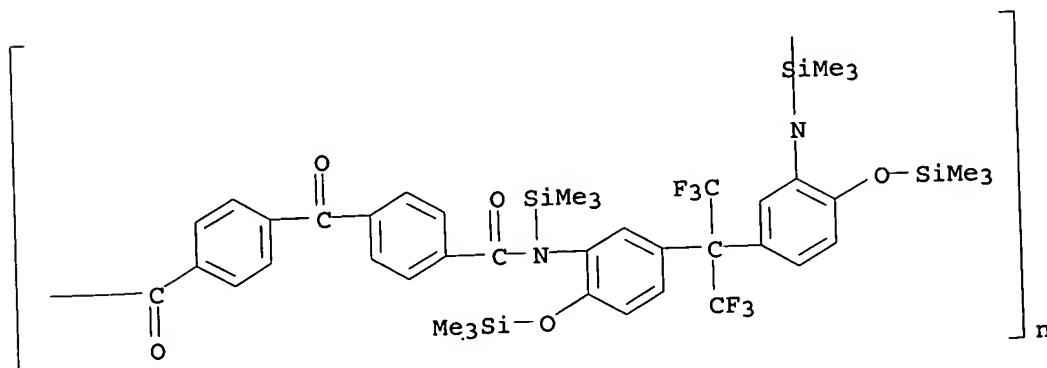
PAGE 1-A



PAGE 1-B



RN 129726-53-0 HCAPLUS  
 CN Poly[[ (trimethylsilyl) imino] [6- [ (trimethylsilyl) oxy] -1,3-phenylene] [2,2,2-trifluoro-1- (trifluoromethyl) ethylidene] [4- [ (trimethylsilyl) oxy] -1,3-phenylene] [ (trimethylsilyl) imino] carbonyl-1,1,4-phenylenecarbonyl-1,4-phenylenecarbonyl] (9CI) (CA INDEX NAME)



CC 74-5 (Radiation Chemistry, **Photochemistry**, and **Photographic** and Other Reprographic Processes)

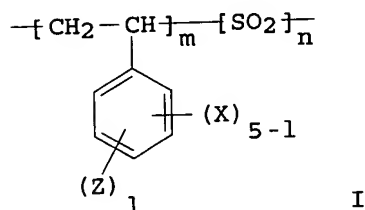
Section cross-reference(s): 76  
 IT 920-46-7D, Methacryloyl chloride, reaction products with  
 fluorinated polybenzoxazole precursor polymer 129701-94-6D  
 , reaction products with methacryloyl chloride 129726-49-4  
 129726-52-9 129726-53-0  
 (heat-resistant fluorinated polybenzoxazole  
 precursor, as potential photoimaging and photoresist  
 materials)

L25 ANSWER 16 OF 19 HCAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 1990:523896 HCAPLUS  
 DOCUMENT NUMBER: 113:123896  
 TITLE: Positive-type resist materials and pattern  
 formation  
 INVENTOR(S): Takechi, Satoshi; Nakamura, Hiroko; Kodachi,  
 Akiko  
 PATENT ASSIGNEE(S): Fujitsu Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 4 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 02103545	A2	19900416	JP 1988-256021	1988 1013
			JP 1988-256021	1988 1013

PRIORITY APPLN. INFO.:

GI



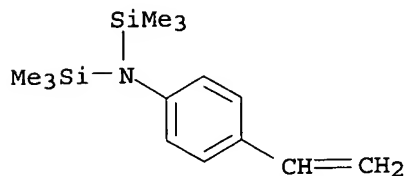
AB A pos.-working resist is a copolymer comprised of SO<sub>2</sub> and a  
 styrene derivative substituted with a group containing  $\geq 1$  Si I (X =  
 H, alkyl; Z = SiMe<sub>3</sub>, NH(SiMe<sub>3</sub>)<sub>2</sub>, N(SiMe<sub>3</sub>)<sub>3</sub>; 1  $\geq$  1) and used  
 as an upper layer resist in a bilayer resist for patterning in  
 semiconductor device fabrication. Thus, SO<sub>2</sub> and  
 p-trimethylsilylstyrene were polymerized to give an electron-beam  
 sensitive resist that gave a precise pattern by electron-beam  
 exposure and THF development.

IT 129258-76-0  
 (electron-beam pos.-working resist, for upper layer)

in bilayer patterning)  
 RN 129258-76-0 HCAPLUS  
 CN Silanamine, N-(4-ethenylphenyl)-1,1,1-trimethyl-N-(trimethylsilyl)-  
 , polymer with sulfur dioxide (9CI) (CA INDEX NAME)

CM 1

CRN 85967-70-0  
 CMF C14 H25 N Si2



CM 2

CRN 7446-09-5  
 CMF O2 S

O=S=O

IC ICM G03F007-039  
 ICS G03F007-075  
 CC 74-5 (Radiation Chemistry, Photochemistry, and  
 Photographic and Other Reprographic Processes)  
 IT 113032-02-3 129258-76-0  
 (electron-beam pos.-working resist, for upper layer  
 in bilayer patterning)

L25 ANSWER 17 OF 19 HCAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 1988:430147 HCAPLUS  
 DOCUMENT NUMBER: 109:30147  
 TITLE: Radiation resist compositions containing  
 silyl-derivative-substituted styrene  
 copolymers  
 INVENTOR(S): Nakasaki, Nobuo; Ai, Hideo  
 PATENT ASSIGNEE(S): Asahi Chemical Industry Co., Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 10 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 62209528	A2	19870914	JP 1986-51324	1986 0311

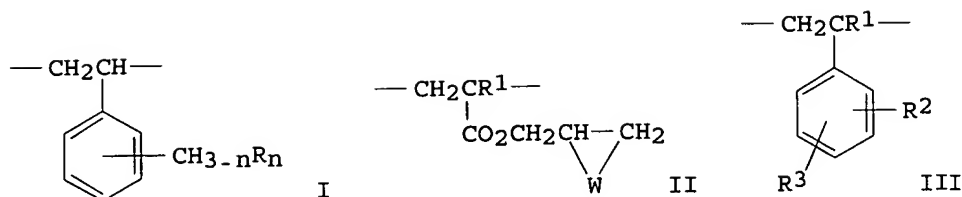
PRIORITY APPLN. INFO.:

JP 1986-51324



1986  
0311

GI



AB The title resist compns. contain copolymers having structural repeating units of the formulas I (R = substituted silyl, siloxanyl, silathianyl, silazanyl; n = 1-3) and I or III (R1 = H, halo, C1-6 alkyl, haloalkyl; R2 = halo, C1-3 haloalkyl, vinyl, epoxy, episulfido; R3 = H, C1-6 alkyl, halo; W = S, O). The resists show high sensitivity toward high-energy beams and give patterns having excellent dry etching resistance.

IT 114975-44-9P

(preparation of, as electron-beam resist)

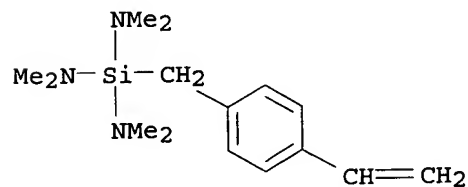
RN 114975-44-9 HCAPLUS

CN Silanetriamine, 1-[(4-ethenylphenyl)methyl]-N,N,N',N',N'',N''-hexamethyl-, polymer with 1,4-diethenylbenzene (9CI) (CA INDEX NAME)

CM 1

CRN 114975-43-8

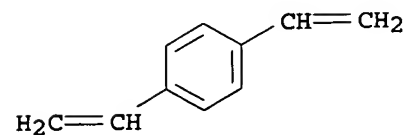
CMF C15 H27 N3 Si



CM 2

CRN 105-06-6

CMF C10 H10



IC ICM G03C001-71

ICA ICS G03F007-10  
 CC C08F212-14; C08F220-32; C08F220-38  
 74-5 (Radiation Chemistry, Photochemistry, and  
 Photographic and Other Reprographic Processes)  
 Section cross-reference(s): 35, 76  
 IT 114975-34-7DP, oxidized or sulfidized 114975-34-7P  
 114975-36-9P 114975-38-1P 114975-39-2P 114975-40-5P  
 114975-42-7P 114975-44-9P 114975-46-1P 114975-47-2P  
 114975-48-3P 114975-49-4P 114975-50-7P 114993-05-4P  
 (preparation of, as electron-beam resist)

L25 ANSWER 18 OF 19 HCAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 1985:513359 HCAPLUS  
 DOCUMENT NUMBER: 103:113359  
 TITLE: Pattern-forming materials  
 PATENT ASSIGNEE(S): Japan Synthetic Rubber Co., Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 60052845	A2	19850326	JP 1983-160259	1983 0902
JP 03044290	B4	19910705	JP 1983-160259	1983 0902

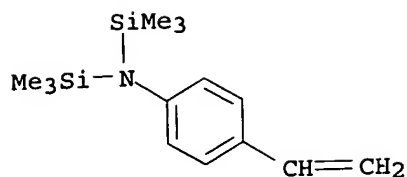
PRIORITY APPLN. INFO.:

AB Pattern-forming materials which are sensitive toward light or ionizing radiation have, as the main constituents, a polymer containing a silyl group or groups and a compound which generates a cation or anion upon irradiation with light or ionizing radiation. The materials provide pos.- or neg.-working resists by selecting the developer solution and exhibit good dry-etch resistance. Thus, p-vinylphenoxy-tert-butyldimethylsilane prepared from 4-vinylphenol and tert-butyldimethylsilyl chloride was polymerized in the presence of BuLi to give a polymer. A resist containing the polymer and Ph3S+AsF6- was coated on a Si wafer, patternwise irradiated with an ionizing radiation, and then developed with 2-PROH to obtain pos. patterns showing high resolution

IT 85967-71-1  
 (resist compns. containing)  
 RN 85967-71-1 HCAPLUS  
 CN Silanamine, N-(4-ethenylphenyl)-1,1,1-trimethyl-N-(trimethylsilyl)-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 85967-70-0  
 CMF C14 H25 N Si2



IC ICM G03C001-71  
ICS G03F007-10  
CC 74-5 (Radiation Chemistry, **Photochemistry**, and  
**Photographic** and Other Reprographic Processes)  
IT 84516-63-2 85967-71-1 88683-19-6  
(**resist** compns. containing)

L25 ANSWER 19 OF 19 HCAPLUS COPYRIGHT 2005 ACS on STN  
ACCESSION NUMBER: 1983:622428 HCAPLUS  
DOCUMENT NUMBER: 99:222428  
TITLE: Fine resist patterns  
INVENTOR(S): Kokaku, Yuuichi; Kitoo, Makoto; Honda,  
Yoshinori  
PATENT ASSIGNEE(S): Hitachi, Ltd. , Japan  
SOURCE: Eur. Pat. Appl., 24 pp.  
CODEN: EPXXDW  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 90615	A2	19831005	EP 1983-301686	1983 0325
EP 90615	A3	19851121		
EP 90615	B1	19890111		
R: DE, FR, GB JP 58165321	A2	19830930	JP 1982-47093	1982 0326
JP 59053841	A2	19840328	JP 1982-163849	1982 0922
US 4560641	A	19851224	US 1983-478666	1983 0325
PRIORITY APPLN. INFO.:			JP 1982-47093	A 1982 0326
			JP 1982-163849	A 1982 0922

AB A multilayer medium provides fine resist patterns (by plasma development), which are useful in fabrication of semiconductors, integrated circuits, bubble memories etc. The medium comprises a

support, an upper resist layer(s) of a substance having a relatively low rate of plasma development, and a lower layer(s) having a relatively high rate of plasma development. Thus, a Si wafer was coated with a thin film of a polyimide (1  $\mu$ ), dried, overcoated with a mixture of poly(glycidyl methacrylate) and dimethyldiphenylsilane (volume ratio 5:1) to give a thickness of 0.2  $\mu$ , imagewise exposed with an electron beam (acceleration voltage 20 kV at  $5 \times 10^{-6}$  C/cm<sup>2</sup>), subjected to an O-CF<sub>4</sub> (3:1 volume ratio, 0.5 torr) plasma for 4 min (so that 300 Å of the upper layer film in the exposed areas was left behind and at the non-irradiated part the lower layer film was exposed), and subjected to an O plasma (0.5 torr) to form a neg. type resist pattern having a thickness of 1  $\mu$ , the residual film ratio was 83%.

IT 88004-41-5 88004-45-9  
     (resist multilayer assembly with uppermost plasma  
     polymerized film of, plasma development of fine images in)  
 RN 88004-41-5 HCAPLUS  
 CN Silanamine, 1,1,1-trimethyl-N-(trimethylsilyl)-, polymer with  
     1-chloro-2-butene (9CI) (CA INDEX NAME)  
 CM 1  
 CRN 999-97-3  
 CMF C6 H19 N Si2

Me<sub>3</sub>Si-NH-SiMe<sub>3</sub>

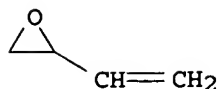
CM 2  
 CRN 591-97-9  
 CMF C4 H7 Cl

H<sub>3</sub>C-CH=CH-CH<sub>2</sub>-Cl

RN 88004-45-9 HCAPLUS  
 CN Oxirane, ethenyl-, polymer with 1,1,1-trimethyl-N-  
     (trimethylsilyl)silanamine (9CI) (CA INDEX NAME)  
 CM 1  
 CRN 999-97-3  
 CMF C6 H19 N Si2

Me<sub>3</sub>Si-NH-SiMe<sub>3</sub>

CM 2  
 CRN 930-22-3  
 CMF C4 H6 O



IC G03F007-02  
 CC 74-5 (Radiation Chemistry, **Photochemistry**, and  
**Photographic** and Other Reprographic Processes)  
 IT 25988-32-3 30812-70-5 **88004-41-5** 88004-42-6  
 88004-43-7 88004-44-8 **88004-45-9**  
 (resist multilayer assembly with uppermost plasma  
 polymerized film of, plasma development of fine images in)

=> d 128 1-5 ibib abs hitstr hitind

L28 ANSWER 1 OF 5 HCAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 2004:353026 HCAPLUS  
 DOCUMENT NUMBER: 140:383101  
 TITLE: **Photosensitive polysilazane**  
 composition and method of forming patterned  
 polysilazane film  
 INVENTOR(S): Nagahara, Tatsuro; Matsuo, Hideki; Aoki,  
 Tomoko; Yamada, Kazuhiro  
 PATENT ASSIGNEE(S): Japan  
 SOURCE: U.S. Pat. Appl. Publ., 17 pp., Cont.-in-part  
 of U.S. Ser. No. 806,852, abandoned.  
 CODEN: USXXCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 2  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2004081912	A1	20040429	US 2003-728801	2003 1208
WO <del>2000020927</del>	A1	20000413	WO 1999-JP5498	1999 1005
W: KR, US				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
PRIORITY APPLN. INFO.:			JP 1998-282697	A 1998 1005
			WO 1999-JP5498	A 1999 1005
			US 2001-806852	B2 2001 0618

AB A photosensitive polysilazane which may be used as a

pos.-tone photoresist, and a method of forming a patterned polysilazane film by use of such a composition are provided. The photosensitive polysilazane composition of the invention is characterized by comprising a polysilazane, particularly polymethylsilazane or polyphenylsilazane, and an optically acid-generating agent. The patterned polysilazane film is obtained by exposing a coating of the photosensitive polysilazane composition of the invention to light in a pattern and dissolving off the exposed portion.

IT 218954-15-5, Polymethylsilazane 683764-82-1,  
Poly(phenylsilazane) 683764-84-3, Poly(butylsilazane)  
(photosensitive polysilazane composition and method of  
forming patterned polysilazane film)

RN 218954-15-5 HCAPLUS  
CN Silanimine, 1-methyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 121221-22-5  
CMF C H5 N Si

$\text{H}_3\text{C}-\text{SiH}=\text{NH}$

RN 683764-82-1 HCAPLUS  
CN Silanimine, 1-phenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 683764-81-0  
CMF C6 H7 N Si

$\text{HN}=\text{SiH}-\text{Ph}$

RN 683764-84-3 HCAPLUS  
CN Silanimine, 1-butyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 683764-83-2  
CMF C4 H11 N Si

$\text{HN}=\text{SiH}-\text{Bu-n}$

IC ICM G03C001-73  
ICS G03F007-039; G03F007-20; G03F007-30; G03F007-40  
INCL 430270100; 430286100; 430287100; 430326000; 430330000; 430905000;  
430914000; 430919000; 430926000  
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and  
Other Reprographic Processes)  
ST Section cross-reference(s): 76  
ST photosensitive polysilazane compn photoresist  
patterned film acid generator  
IT Photoresists  
(photosensitive polysilazane composition and method of

- forming patterned polysilazane film)
- IT Polysiloxanes, uses  
(silazane-, di-Ph; **photosensitive** polysilazane composition  
and method of forming patterned polysilazane film)
- IT Silazanes  
(siloxane-, di-Ph; **photosensitive** polysilazane composition  
and method of forming patterned polysilazane film)
- IT 3386-65-0, Palladium propionate  
(oxidation catalyst; **photosensitive** polysilazane composition  
and method of forming patterned polysilazane film)
- IT 614-45-9, tert-Butyl peroxybenzoate  
(**photoacid** generator; **photosensitive**  
polysilazane composition and method of forming patterned  
polysilazane film)
- IT 1143-72-2D, 2,3,4-Trihydroxybenzophenone, mono- and di- and tri-  
esters 20546-03-6 25155-25-3,  $\alpha,\alpha'$ -Bis(tert-  
butylperoxy)diisopropylbenzene 77473-08-6, 3,3',4,4'-Tetra(tert-  
butylperoxycarbonyl)benzophenone 218954-15-5,  
Polymethylsilazane 683764-82-1, Poly(phenylsilazane)  
683764-84-3, Poly(butylsilazane)  
(**photosensitive** polysilazane composition and method of  
forming patterned polysilazane film)
- IT 90164-34-4 683764-85-4  
(sensitizing dye; **photosensitive** polysilazane composition  
and method of forming patterned polysilazane film)

L28 ANSWER 2 OF 5 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2000:241669 HCAPLUS

DOCUMENT NUMBER: 132:286325

TITLE: **Photosensitive** polysilazane  
composition and method of forming patterned  
layer using same

INVENTOR(S): Nagahara, Tatsuro; Matsuo, Hideki; Aoki,  
Tomoko; Yamada, Kazuhiro

PATENT ASSIGNEE(S): Tonen Corporation, Japan

SOURCE: PCT Int. Appl., 45 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000020927	A1	20000413	WO 1999-JP5498	1999 1005
JP 2000181069	A2	20000630	JP 1999-283106	1999 1004
TW 495494	B	20020721	TW 1999-88117059	1999 1004
EP 1164435	A1	20011219	EP 1999-970175	1999 1005

W: KR, US  
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU,  
MC, NL, PT, SE

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE,  
 MC, PT, IE, FI  
 US 2004081912 A1 20040429 US 2003-728801

PRIORITY APPLN. INFO.:

JP 1998-282697

A

2003  
12081998  
1005

WO 1999-JP5498

W

1999  
1005

US 2001-806852

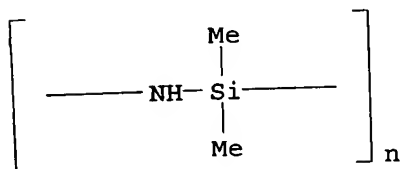
B2

2001  
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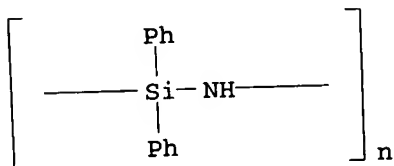
AB The photosensitive polysilazane composition has a polysilazane and a light-sensitive acid-generating agent. The composition provides the patterned pos.-working polysilazane layer directly used as a photoresist.

IT 32169-90-7, Poly[imino(dimethylsilylene)]  
 153340-09-1, Poly[imino(diphenylsilylene)]  
 (photosensitive polysilazane composition)

RN 32169-90-7 HCAPLUS  
 CN Poly[imino(dimethylsilylene)] (8CI, 9CI) (CA INDEX NAME)



RN 153340-09-1 HCAPLUS  
 CN Poly[imino(diphenylsilylene)] (9CI) (CA INDEX NAME)



IC ICM G03F007-075  
 ICS G03F007-004; H01L021-027; C08L083-16  
 CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
 ST photosensitive polysilazane compn pattern forming method  
 photoresist  
 IT Photoresists  
 (photosensitive polysilazane composition and method of forming patterned polysilazane film)  
 IT 614-45-9, tert-Butylperoxybenzoate 25155-25-3,  
 $\alpha,\alpha'$ -Bis(tert-butylperoxy)diisopropylbenzene



32169-90-7, Poly[imino(dimethylsilylene)] 68510-93-0  
 77473-08-6, 3,3',4,4'-Tetra(tert-butylperoxycarbonyl)benzophenone  
 153340-09-1, Poly[imino(diphenylsilylene)]  
 (photosensitive polysilazane composition)

REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE  
 FOR THIS RECORD. ALL CITATIONS AVAILABLE  
 IN THE RE FORMAT

L28 ANSWER 3 OF 5 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1999:271577 HCAPLUS  
 DOCUMENT NUMBER: 130:289209  
 TITLE: Polyimide composition for positive  
 photoresist  
 INVENTOR(S): Itatani, Hiroshi; Matsumoto, Shunichi  
 PATENT ASSIGNEE(S): PI R & D Co., Ltd., Japan  
 SOURCE: PCT Int. Appl., 112 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 2  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9919771	A1	19990422	WO 1998-JP4577	1998 1012

W: CN, JP, KR, US  
 RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU,  
 MC, NL, PT, SE  
 EP 1024407 A1 20000802 EP 1998-947813  
 1998  
 1012

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE,  
 MC, PT, IE, FI  
 US 6627377 B1 20030930 US 2000-529382  
 2000  
 0626

PRIORITY APPLN. INFO.: JP 1997-315781 A 1997  
 1013  
 JP 1997-320266 A 1997  
 1016  
 JP 1997-353987 A 1997  
 1117  
 JP 1997-353988 A 1997  
 1117  
 JP 1997-363044 A 1997  
 1125  
 JP 1997-363045 A

1997  
1125

JP 1997-363378 A 1997  
1126

JP 1997-365491 A 1997  
1202

JP 1997-370187 A 1997  
1222

JP 1998-31933 A 1998  
0105

JP 1998-108410 A 1998  
0316

JP 1997-352987 A 1997  
1117

WO 1998-JP4577 W 1998  
1012

AB A **photosensitive** polyimide composition is soluble in organic solvents, excellent in adhesiveness, heat resistance, mech. characteristics and flexibility, and is capable of exhibiting alkali-soluble, highly sensitive pos. **photoresist** characteristics upon irradiation with light. The composition comprises a **photo-acid generator** and a solvent soluble polyimide exhibiting pos. **photosensitivity** in the presence of the generator.

IT 222844-73-7P, 3,3',4,4'-Biphenyltetracarboxylic dianhydride; diaminosilane;  $\gamma$ -valerolactone; 3,4,3',4'-benzophenonetetracarboxylic dianhydride; 3,3'-dihydroxy-4,4'-diaminobiphenyl; 3,4'-diaminodiphenyl ether block copolymer (polyimide composition for pos. **photoresist**)

RN 222844-73-7 HCAPLUS

CN [5,5'-Biisobenzofuran]-1,1',3,3'-tetrone, polymer with 3-(4-aminophenoxy)benzenamine, 5,5'-carbonylbis[1,3-isobenzofurandione], 4,4'-diamino[1,1'-biphenyl]-3,3'-diol, dihydro-5-methyl-2(3H)-furanone and silanediamine, block (9CI) (CA INDEX NAME)

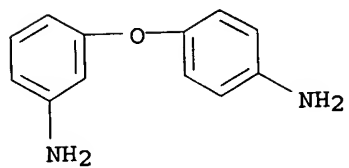
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CRN 14044-99-6

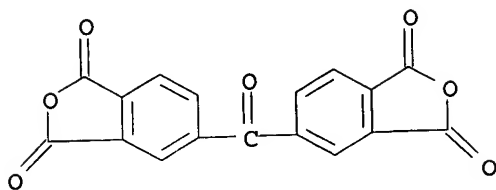
CMF H6 N2 Si

 $\text{H}_2\text{N}-\text{SiH}_2-\text{NH}_2$

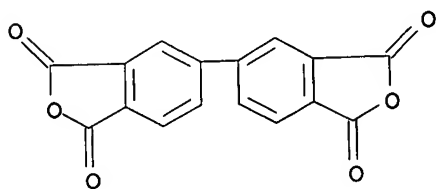
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CRN 2657-87-6  
CMF C12 H12 N2 O

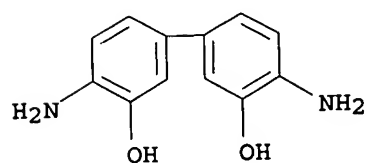
CM 3

CRN 2421-28-5  
CMF C17 H6 O7

CM 4

CRN 2420-87-3  
CMF C16 H6 O6

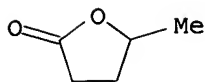
CM 5

CRN 2373-98-0  
CMF C12 H12 N2 O2

CM 6

CRN 108-29-2

CMF C5 H8 O2



IC ICM G03F007-039  
 ICS G03F007-022; G03F007-004; C08L079-08; C09D179-08; C08G073-10;  
 H05K003-28; H05K003-46; H01L021-027

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and  
 Other Reprographic Processes)  
 Section cross-reference(s): 35

ST polyimide compn pos **photoresist**

IT Positive **photoresists**  
 (polyimide composition for pos. **photoresist**)

IT Polyimides, uses  
 (polyimide composition for pos. **photoresist**)

IT 15499-84-0P  
 (polyimide composition for pos. **photoresist**)

IT 80180-96-7P, 3,3',4,4'-Benzophenonetetracarboxylic  
 dianhydride-2,4-diaminotoluene-3,3'-dimethoxy-4,4'-diaminobiphenyl  
 copolymer 87182-96-5P, 2,2-Bis[4-(4-  
 aminophenoxy)phenyl]hexafluoropropane-4,4'-[2,2,2-trifluoro-1-  
 (trifluoromethyl)ethylidene]bis(1,2-benzenedicarboxylic acid  
 dianhydride) copolymer 134096-63-2P 144279-09-4P  
 162735-41-3P 177190-29-3P 177190-34-0P 186967-17-9P  
 222842-97-9P, 3,4,3',4'-Biphenyltetracarboxylic acid  
 dianhydride-2,2-bis[4-(4-aminophenoxy)phenyl]propane-2,3-  
 diaminodiphenyl ether copolymer 222843-01-8P 222843-06-3P,  
 3,4,3',4'-Biphenyltetracarboxylic acid dianhydride-3,4,3',4'-  
 benzophenonetetracarboxylic acid dianhydride-2,4-diaminotoluene-  
 diaminosiloxane-3,4-diaminodiphenyl ether-2,2-bis[4-(4-  
 aminophenoxy)phenyl]hexafluoropropane block copolymer  
 222843-27-8P, m-BAPS-3,4,3',4'-benzophenonetetracarboxylic acid  
 dianhydride-9,9-bis(4-aminophenyl)fluorene-3,4,3',4'-  
 Biphenyltetracarboxylic acid dianhydride-3,5-diaminobenzoic acid  
 block copolymer 222843-32-5P 222843-36-9P,  
 3,4,3',4'-Benzophenonetetracarboxylic Acid Dianhydride-4,4'-  
 diaminodiphenylsulfide-3,4,3',4'-biphenyl tetracarboxylic Acid  
 Dianhydride-3,3'-dihydroxybenzidine-m-BAPS block copolymer  
 222843-50-7P 222843-56-3P 222843-63-2P 222843-70-1P  
 222843-77-8P 222843-82-5P 222843-88-1P 222843-94-9P  
 222843-98-3P 222844-05-5P 222844-10-2P 222844-17-9P  
 222844-25-9P 222844-32-8P 222844-44-2P 222844-51-1P  
 222844-59-9P 222844-67-9P 222844-73-7P,  
 3,3',4,4'-Biphenyltetracarboxylic dianhydride; diaminosilane;  
 γ-valerolactone; 3,4,3',4'-benzophenonetetracarboxylic  
 dianhydride; 3,3'-dihydroxy-4,4'-diaminobiphenyl;  
 3,4'-diaminodiphenyl ether block copolymer 222844-82-8P  
 222844-87-3P 222844-93-1P 222844-96-4P 222845-03-6P  
 222845-07-0P, 3,3',4,4'-Benzophenonetetracarboxylic acid  
 dianhydride-3,3'-dinitro-4,4'-diaminodiphenyl-bis[4-(3-  
 Aminophenyl)phenyl]sulfone copolymer 222845-11-6P 222845-17-2P

222845-23-0P 222845-26-3P 222845-32-1P 222845-38-7P,  
 3,3',4,4'-Biphenyltetracarboxylic acid anhydride-1,5-  
 diaminoanthraquinone-2,2-bis[4-(3-aminophenoxy)phenyl]propane  
 copolymer 222845-43-4P 222845-53-6P 222845-58-1P  
 222845-63-8P 222845-68-3P, 3,3',4,4'-Benzophenonetetracarboxylic  
 acid dianhydride-1,4-bis(3-aminopropyl)piperazine-bis[4-(3-  
 aminophenoxy)phenyl]sulfone copolymer 222845-73-0P  
 222845-77-4P 222845-83-2P 222845-89-8P 222845-95-6P  
 222846-01-7P 222846-08-4P 222846-13-1P 222846-18-6P  
 222846-23-3P, 3,3',4,4'-Biphenyltetracarboxylic acid  
 dianhydride-bis-4-(3-aminophenoxy)phenylsulfone-2,2-bis-[4-(3-  
 aminophenoxy)phenyl]hexafluoropropane copolymer 222846-30-2P  
 222846-54-0P 222846-63-1P 222846-79-9P 222846-83-5P  
 222846-88-0P, 3,4,3',4'-Biphenyltetracarboxylic acid  
 dianhydride-2,2-ditrifluoromethylbendzidine-2,2-bis[4-(4-  
 aminophenoxy)phenyl]propane-3,5-diaminobenzoic acid block  
 copolymer 222846-93-7P  
 (polyimide composition for pos. photoresist)  
 IT 86-73-7, Fluorene  
 (polyimide composition for pos. photoresist)  
 IT 83803-86-5 222843-16-5, m-BAPS-3,3'-dimethylbenzidine-4,4'-  
 [2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]bis(1,2-  
 benzenedicarboxylic acid dianhydride) copolymer 222843-21-2,  
 m-BAPS-bicyclo(2,2,2)-octa-7-ene-2,3,5,6-tetracarboxylic acid  
 dianhydride-pyromellitic acid dianhydride copolymer 222843-41-6,  
 2,2-Bis[4-(4-aminophenoxy)phenyl]propane-3,4,3',4'-  
 Biphenyltetracarboxylic dianhydride-3,5-diaminobenzoic  
 acid-pyromellitic acid dianhydride-2,2'-bis(trifluoromethyl)  
 benzidine block copolymer  
 (polyimide composition for pos. photoresist)  
 REFERENCE COUNT: 13 THERE ARE 13 CITED REFERENCES AVAILABLE  
 FOR THIS RECORD. ALL CITATIONS AVAILABLE  
 IN THE RE FORMAT

L28 ANSWER 4 OF 5 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1988:446274 HCAPLUS

DOCUMENT NUMBER: 109:46274

TITLE: Photochemically decomposable  
 microcapsules

INVENTOR(S): Watanabe, Akio; Washizu, Shintaro; Shinozaki,  
 Fumiaki; Ishikawa, Shunichi; Aoi, Toshiaki

PATENT ASSIGNEE(S): Fuji Photo Film Co., Ltd., Japan

SOURCE: Ger. Offen., 29 pp.

CODEN: GWXXBX

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 1

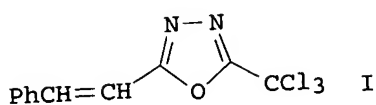
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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DE 3630693	A1	19870312	DE 1986-3630693	1986 0909
JP 62057646	A2	19870313	JP 1985-198744	1985 0909
JP 62057647	A2	19870313	JP 1985-198745	1985

US 4766037 A 19880823 US 1986-906702 0909  
 1986  
 0909  
 JP 1985-198744 A 1985  
 0909  
 JP 1985-198745 A 1985  
 0909

PRIORITY APPLN. INFO.:

GI



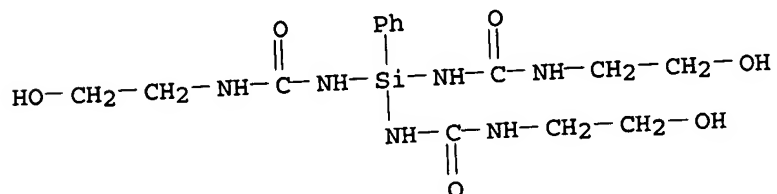
AB Photochem. decomposable microcapsules, which can be used in a variety of imaging applications and the like, are composed of liquid or semi-solid cores and polymeric walls from a silyl ether or silylureido bond-containing synthetic polymer and a compound that frees an acid upon exposure to light. A sensitizer for increasing the amount of acid freed upon exposure can also be added to the walls. Upon exposure the characteristics of the microcapsule walls are altered by the formation of the acid. Microcapsules, which contained 1,1-xylylphenylethane and I, were prepared by polymerization of  $\text{Me}_2\text{Si}(\text{OCH}_2\text{CH}_2\text{OH})_2$  with Burnock D-750 in poly(vinyl alc.). The microcapsules were filtered off, combined with dextrin, coated on a paperboard box, and UV exposed. The pressure required to rupture the microcapsules in the exposed areas was 5 kg/m<sup>2</sup> vs. 300 kg/m<sup>2</sup> in the nonexposed areas.

IT 110707-54-5 110769-44-3 110769-45-4  
 (photodecomposable microcapsules with walls containing acid generator and)

RN 110707-54-5 HCAPLUS  
 CN Urea, N,N',N''-(phenylsilylidyne)tris[N'-(2-hydroxyethyl)-, polymer with 1,3-diisocyanatomethylbenzene and 1,6-hexanediamine (9CI) (CA INDEX NAME)

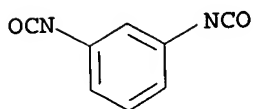
CM 1

CRN 110707-53-4  
 CMF C15 H26 N6 O6 Si



CM 2

CRN 26471-62-5  
 CMF C9 H6 N2 O2  
 CCI IDS



D1-Me

CM 3

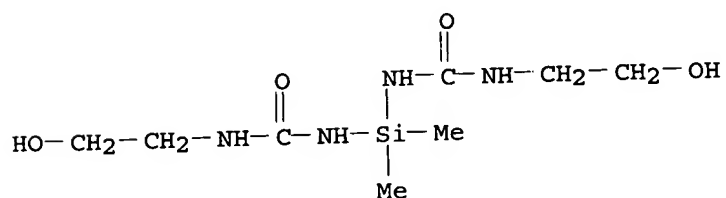
CRN 124-09-4  
 CMF C6 H16 N2

H<sub>2</sub>N-(CH<sub>2</sub>)<sub>6</sub>-NH<sub>2</sub>

RN 110769-44-3 HCAPLUS  
 CN Carbamic acid, (3-isocyanatomethylphenyl)-, 2-ethyl-2-[[[(3-isocyanatomethylphenyl)amino]carbonyl]oxy]methyl]-1,3-propanediyl ester, polymer with N,N'-(dimethylsilylene)bis[N'-(2-hydroxyethyl)urea] (9CI) (CA INDEX NAME)

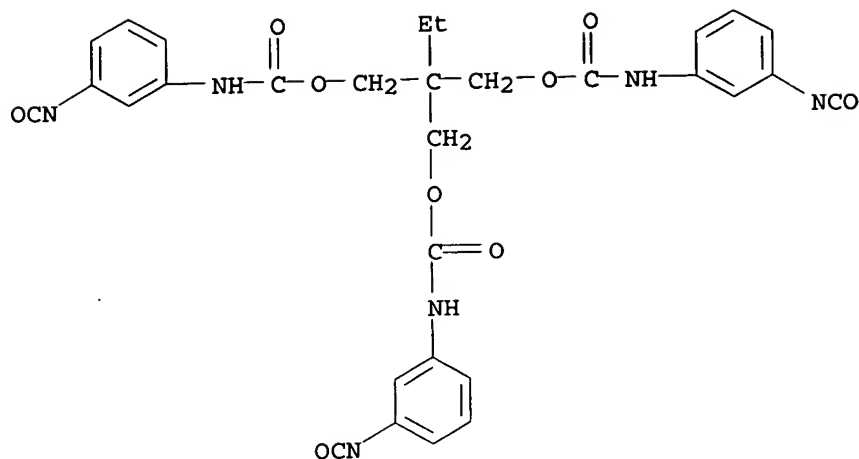
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CRN 110769-43-2  
 CMF C8 H20 N4 O4 Si



CM 2

CRN 28805-80-3  
 CMF C33 H32 N6 O9  
 CCI IDS

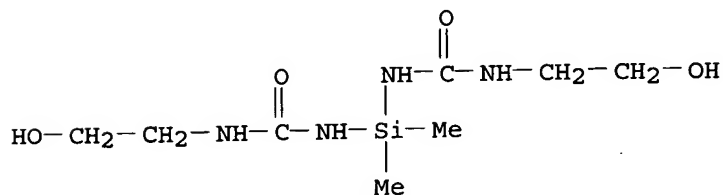


3 ( D1-Me )

RN 110769-45-4 HCAPLUS  
 CN Isocyanic acid, polymethylenepolyphenylene ester, polymer with  
 N,N'-(dimethylsilylene)bis[N'-(2-hydroxyethyl)urea] and  
 $\alpha,\alpha',\alpha'',\alpha'''$ -[1,2-  
 ethanediylbis[nitrilobis(methyl-2,1-ethanediyl)]]tetrakis[ $\omega$ -  
 hydroxypoly[oxy(methyl-1,2-ethanediyl)]] (9CI) (CA INDEX NAME)

CM 1

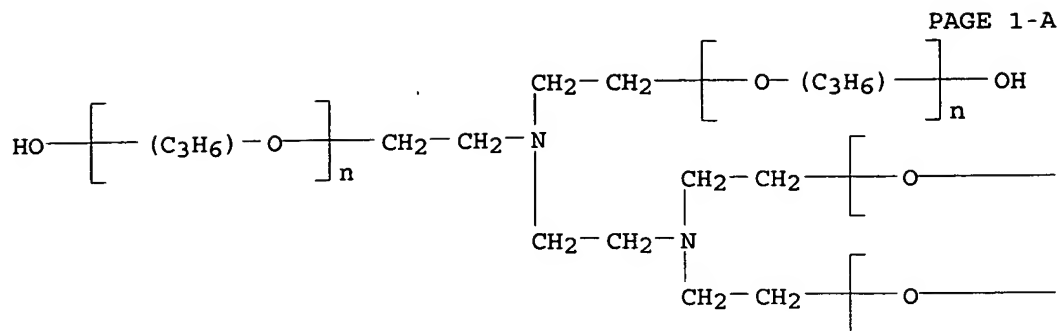
CRN 110769-43-2  
 CMF C8 H20 N4 O4 Si



CM 2

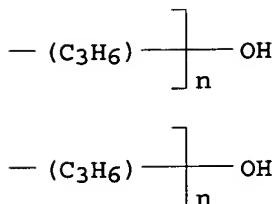
CRN 51178-86-0  
 CMF (C3 H6 O)n (C3 H6 O)n (C3 H6 O)n (C3 H6 O)n C14 H32 N2 O4  
 CCI IDS, PMS





4 ( D1-Me )

PAGE 1-B



CM 3

CRN 9016-87-9  
 CMF Unspecified  
 CCI PMS, MAN

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

IC ICM B01J013-02

ICS A61K009-58; G03C005-54

ICA C08J003-28; C09B067-08; C09J003-00; C09K019-52; C23F011-00;  
C11D017-00; A01N025-28; G03C001-68

ICI C08L083-04, C08K005-34

CC 74-10 (Radiation Chemistry, Photochemistry, and Photographic and  
Other Reprographic Processes)ST pressure sensitive **photodecomposable** microcapsule  
recording; transfer pressure sensitive **photodecomposable**  
microcapsuleIT **Photoimaging** compositions and processes  
(**photodecomposable** pressure-sensitive  
microcapsule-containing, for transfer images)IT 110680-80-3 110707-52-3 110707-54-5 110769-42-1  
110769-44-3 110769-45-4

(photodecomposable microcapsules with walls containing

acid generator and)  
 IT 68015-88-3 72015-19-1 110884-64-5  
 (photodecomposable microcapsules with walls containing,  
 for photoimaging applications)

L28 ANSWER 5 OF 5 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1988:213993 HCAPLUS

DOCUMENT NUMBER: 108:213993

TITLE: Positive-working photosensitive  
 compositions for lithographic plates

INVENTOR(S): Urano, Toshoshi; Tomiyasu, Hiroshi; Maeda,  
 Yoshihiro; Nakai, Hideyuki; Goto, Sei; Sasa,  
 Nobumasa

PATENT ASSIGNEE(S): Mitsubishi Chemical Industries Co., Ltd.,  
 Japan; Konica Co.

SOURCE: Jpn. Kokai Tokkyo Koho, 9 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 62222246	A2	19870930	JP 1986-16687	

1986

0130

PRIORITY APPLN. INFO.: JP 1986-16687

1986

0130

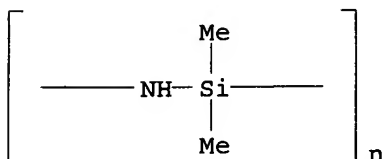
AB The title compns. contain agents that generate  
 acids on irradiation with light and compds. or polymers containing  
 Si-N bonds cleaved with the acids. The compns. do not contain  
 quinoeazide compds. and provide high sensitivity and clean,  
 non-reddish images. Thus, a cleaned, etched, anodized, and sealed  
 Al plate was coated with a composition containing a m,p-cresol-HCHO-phenol  
 novolak resin 6.0, 1,1,1,3,3,3-hexamethylsilazane 0.66,  
 2-trichloromethyl-5-[ $\beta$ -(2'-benzofuryl)vinyl]-1,3,4-oxadiazole  
 0.66 g, and solvents to form a 2.0 g/m<sup>2</sup> layer. Optimum exposure  
 was 445 mJ. No stain was observed in its processing, and excellent  
 reproduction of half-tone neg. images was shown.

IT 32169-90-7

(presensitized lithog. plates containing acid-  
 generating photolabile compound and)

RN 32169-90-7 HCAPLUS

CN Poly[imino(dimethylsilylene)] (8CI, 9CI) (CA INDEX NAME)



IC ICM G03C001-72

ICS G03C001-72; G03F007-02

CC 74-6 (Radiation Chemistry, Photochemistry, and Photographic and  
Other Reprographic Processes)  
ST lithog plate **photosensitive** silicon contg; silicon  
nitrogen compd lithog plate  
IT Phenolic resins, uses and miscellaneous  
(**photosensitive** silicon-containing plates containing, for  
lithog. plate preparation)  
IT Lithographic plates  
(presensitized, **acid-generating** agents and  
nitrogen-containing silicon compds. for)  
IT 35464-74-5, m-Cresol-p-cresol-formaldehyde-phenol copolymer  
(**photosensitive** silicon-containing plates containing, for  
lithog. plate preparation)  
IT 996-50-9 999-97-3 2587-46-4 30175-32-7 32169-90-7  
(presensitized lithog. plates containing **acid-**  
**generating photolabile** compound and)